HELSINKI SCHOOL OF ECONOMICS (HSE)
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MOTION PICTURE FINANCE AND SUCCESS DETERMINANTS

A North European story

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Abstract
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PURPOSE OF THE STUDY

This thesis presents an overview of Finnish motion picture financing and an empirical study of the determinants of the success of a motion picture in Finland, Norway and Denmark. The ultimate purpose of this study is to create a model for the production of successful movies in the North European market.

The effect of government subsidies in motion picture productions is also studied. The public supporters have an essential role in financing the North European culture productions, and this thesis provides information how they influence the movie industry and individual productions. In addition this thesis studies the implications of the international distribution of movies.

DATA AND METHODOLOGY

Log-linear regression analysis is applied to an original dataset covering 394 movies from three Nordic countries. The data is manually collected from a wide variety of sources. This study also uses a complementary qualitative dataset of expert interviews that were conducted in person.

RESULTS

This thesis finds that there are several variables that can predict the success of a movie. The production size and the sources of financial backing, the movie genre, the selected cast and other marketable variables, distribution and critical acclaim all affect the movie's success probabilities.

Depending on the country, the public support in motion picture productions clearly has implications to the movie market. Finland, with a smaller budget for the movie subsidies, emphasizes the domestic market more in the support decisions than the other two countries. Perhaps as a consequence Finnish movies are not as successful in reaching the international theater screens.

KEYWORDS

Motion picture finance, log-linear regression, entertainment industry, culture, public support

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15. toukokuuta, 2008

ELOKUVIEN RAHOITUS JA MENESTYSTEKIJÄT
Tarina Pohjois-Euroopasta

TUTKIMUKSEN TARKOITUS

Tutkimus luo yleiskuvan suomalaisesta elokuvarahoituksesta ja tutkii empiirisesti elokuvien menestystekijöitä Suomessa, Norjassa ja Tanskassa. Tutkimuksen tavoitteena on luoda malli menestyselokuvien tuottamiselle Pohjois-Euroopassa.

Tutkimus pyrkii myös selvittämään kansallisten subventioiden vaikutukset elokuvien tuotantoon. Julkisilla tuilla on merkittävä rooli Pohjois-Eurooppalaisten kulttuuri-tuotantojen rahoituksessa. Tämä tutkimus tarjoaa lisätietoa siitä kuinka tuet vaikuttavat sekä elokuvateollisuuteen kokonaisuutena että yksittäisiin tuotantoihin. Lisäksi tutkin mikä merkitys on elokuvien kansainvälisellä jakelulla.

DATA JA METODOLOGIA

Kolmesta Pohjoismaasta kerättyä, 394 elokuvasta koostuvaa alkuperäista dataa tutkitaan regressioanalyysin keinoin. Data on kerätty käsin useasta eri lähteestä. Tämän lisäksi tutkimus hyödyntää kasvotusten tehtyä kvalitatiivista haastatteluaineistoa.

TULOKSET

Tutkimuksessa havaitaan että usea tekijä vaikuttaa suoraan elokuvan menestymiseen. Tuotannon koko ja rahoituslähde, elokuvan genre, elokuvan ohjaaja, näyttelijä sekä muut bränditekijät, jakelu ja arvostelu- ja palkintomenestys vaikuttavat kaikki elokuvan menestysmahdollisuuksiin.

Maasta riippuen elokuvatuilla on erilaisia seurauksia elokuvien markkinoihin. Verrattuna tutkimuksen kahteen muuhun maahan Suomessa elokuvia tuetaan kokonaisuudessaan vähemmän, ja erityisesti kotimarkkinoiden menestykseen keskittyen. Mahdollisesti siitä johtuen suomalaisten elokuvien kansainvälinen levitys on jäänyt naapurimaita vähäisemmäksi.

AVAINSANAT

Elokuvien rahoitus, regressioanalyysi, viihdeteollisuus, kulttuuri, julkinen tuki

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1 Introduction

1.1 Background and motivation

Producing motion pictures and other cultural products is a highly risky endeavor where a few hits make most of the profits of the whole industry. The uncertainty is deeply present in the cultural industries in general, and in the movie industry in particular. "Nobody knows anything" seems to describe the industry best. The movie product is an experience good, the consumer knows if it is worth his time and money only after seeing it. This fact makes the dynamics behind movie profits very interesting. Low profile films can surprise in the theaters and continue running for a long period.

Due to the fact that most of the costs occur early in a project's lifecycle and the unpredictable returns in the very end, finding the required financing for the production can be exceedingly challenging. Especially new moviemakers face many obstacles that need to be overcome before their vision can turn into reality. Adding to the complexity, European movie production is heavily influenced by the government culture subsidies. In some productions over 50% of the film's budget is covered by public funding. Culture support is a constant political topic on both the national and EU level, and adjustments to the policies are common.

Even though the Nordic home markets are small, domestic films are generally preferred over competition. International distribution is aspired and sometimes accomplished although the language barrier and variations in local tastes make it difficult. Movies that are successful in their home markets are not necessarily suitable for international audiences. The opposite is equally true.

These qualities make the motion picture industry a very interesting topic for academic research.

1.2 Research problem and contribution

Ultimately this study tries to build a general model for making successful movies in Northern Europe. Or to put it in question form: "What is a successful movie and how to make one in Northern Europe?" This rather ambitious goal is approached from several angles: What is the market for such movies, how are those films financed, and what should the content be like?

The viewpoint of the thesis is mostly of the filmmaker's, although the role of the financiers, both public and private, is also considered. Therefore, the thesis does have practical relevance to current or aspiring practitioners of the industry. Moreover, this study contributes to the financial research of motion pictures by including Nordic movie markets, and is among the first papers to use cross border data. By building a framework for movie success, the study applies previously tested models into a dataset that has not been used before, and widens the growing number of papers in financial research of motion pictures.

This thesis has two focus areas that have little or no previous research. First, culture subsidies are a common practice in Europe; but there is surprisingly little academic research about their economic relevance. What is the influence of public money in an entertainment industry? Second, the end product of a motion picture production is practically intangible and easy to copy, yet the bulk of Finnish movies remain inside the country borders. Despite requiring a large number of highly skilled workers and considerable financial backing, Finnish movies are rarely exported. How are complementary products from neighboring countries different? These two issues might be related.

1.3 Definitions of key concepts

This thesis uses the term "success" extensively. Success is generally defined as "the accomplishment of an aim or purpose" and more specifically as "the attainment of popularity or profit" by the New Oxford American Dictionary. The latter definition includes the uses of the term in this study. Albeit this study focuses on the financial accomplishments of a movie, topics such as the movie's popularity and its subjective quality are also included in the thesis. The intended meaning is observable from the context.

1.4 Limitations

There are two main limitations in this thesis. First, this thesis provides only limited information on real life production decisions, as the volatility of movie returns remains extremely high. This thesis is not a practical guidebook or intended as such. Cautious approach is recommended if the thesis is applied in real production or finance decisions.

Second, this thesis and its results are limited by geography and dataset. The results are based only on motion pictures that have generated box office revenue in three Nordic countries: The movie rental and DVD sales are not included in the dataset of the thesis.

1.5 Literary review

There are a few determinants that are found to have an effect on a film's success in previous literature. Production size is known to be an important predictor of a movie's performance based on several papers (Basuroy, Chatterjee and Ravid, 2003; Litman, 1982) as bigger budgets allow for better digital effects and expensive sets. Studies have also shown that being a sequel, critics' reviews (Ravid, 1999), number of opening screens (Eliashberg and Shugan, 1997; Litman, 1982) and age rating (Ravid and Basuroy, 2004) have a significant effect on box office performance.

The significance of star power (De Vany and Walls, 2004; Basuroy et al, 2003), genre (Litman and Kohl, 1989) and the awards (Ravid, 1999) has been widely tested but the results have been mixed. Common sense says that actors and directors should, because of their brand power, contribute to a movie's success; yet the results have not been unanimous and often insignificant (De vany and Walls, 1999). The comedy genre has been found in some papers to be significant (Litman and Kohl, 1989). Practically all of the studies have focused to the North American market, although there are a few exceptions (e.g. Bagella and Bechetti, 1999).

1.6 Data and research methodology

This study uses both quantitative and qualitative data: The statistical dataset includes the data of 394 domestic movies released in Nordic movie theaters in their respective countries. The movies were released between 1995 and 2007. The qualitative dataset consists of expert interviews.

Nordic data has a few good qualities for academic research; each of the domestic markets is quite small and most movies are not shown outside country borders. It makes it easier to obtain a complete view of the market, thus providing a good testing ground for the study.

This study uses a log-linear ordinary least squares regression model to derive the effects of different determinants to motion picture revenue. Similar models have been previously tested by Smith et al. (1986) and since used by many researchers with slightly modified variables including Prag et al. (1994) and Ravid (1999).

1.7 Results

This thesis does not support the view that nothing can be predicted with regards to the movie's success. At least in the three countries used in the study several variables can statistically improve the success likelihood of the movie. The production size and the sources of financial backing, the movie genre, the selected cast and other marketable variables, distribution and critical acclaim all affect the movie's success probabilities. However, the model used in this thesis can only explain a small portion of the factors contributing to the movie's success.

The public subsidies in the motion picture productions clearly have big implications to the Nordic movie markets. Finnish movies have to reach a certain market share of domestic admissions, and with smaller budgets for movie subsidies the emphasis is focused on the domestic admissions. Consequently international success has been much more prevalent in the neighboring countries, especially in Denmark.

1.8 Structure of the study

The thesis is structured into eight separate chapters as follows: After the introduction the second chapter discusses the motion picture market generally. The third chapter is a brief introduction to the motion picture finance. The fourth chapter is the literature review and presents the earlier academic studies on motion pictures and their empirical findings. The fifth chapter introduces the hypotheses used in the study. The sixth chapter presents the data and methodology. Next the seventh chapter includes empirical results and discussion. Finally the eighth chapter is the conclusion.

2 The movie business

This chapter is devoted to describing the industry, focusing especially on the Northern European market. First the general economics behind motion pictures is discussed, which is followed by a brief outlook on the Nordic movie industry. In the end of the chapter the academic rationales behind cultural subsidies in the film industry are presented.

2.1 Industry economics

The film industry among cultural industries has many qualities that separate it from other industries. Each movie is a separate project that is financed individually, and its returns are extremely difficult to predict. Most of the costs involved are incurred very early in the lifecycle of the movie, yet the returns are collected only after the film has been released to theaters. Production times can be counted in years, and before the film is finished both the economic situation and the movie trends can be completely different.

Movie productions are risky projects; many of them never make any money, some are able to break even and a few are amazing successes. In general motion pictures are not great investments, the rate of return is very low on average and the volatility is high. Despite these unpredictable qualities many new practitioners are drawn to the business.

When talked about the movie industry the proposition that "nobody knows anything", originally introduced by William Goldman in his book "Adventures in the Screen Trade" (1983), is heard often. This quote refers to the idea that before the films release, there is very limited if any knowledge on how well it will do. The dynamics behind a film's success are complex, thus making forecasting a seemingly impossible task. Nobody knows because each movie is a unique creative product with a relatively short lifespan but an unlimited scalability to demand. A movie is an entertainment product the value of which is known to the viewer only after its consumption.

2.1.1 Demand and supply

Using the article by De Vany (2006) as a basis, I will present here the general outlook on the movie revenue formation. The primary sources of information for the demand of an individual movie are the box office receipts that can understandably be acquired only after the release date of the film. Throughout the film's run, audiences signal information about the movie's likeability to the distributors and the exhibitors. The design of the release has major consequences; a wide release on many screens gathers a lot of information but limits the ways on how to respond to it. The film might disappear before the word of mouth starts to spread, and the audience has found it. A smaller release gives more time to adjust to the information flow.

The first response on adapting the supply to the demand especially on wider releases is extending the film's run. In smaller releases the number of prints is often increased; the film is then exhibited in additional theater screens. Wider releases tend to be riskier for both the exhibitor and the distributor, without prior information about the demand the film might be shown in empty theaters. Furthermore the film prints are expensive and a wider release requires more to be spent on film rolls knowing next to nothing about the demand. However if the film does well in theaters there is no limit on how long it can continue running, the contract between the distributor and exhibitor can always be renegotiated.

Another way to adjust to demand is to alter prices. Movies have three relevant prices to consider: the admission price, the rental rate and the distribution fee. The admission price is set by the theater, and it tends to be fixed. There might be some price discrimination between show times, but usually not between films. The rental rate is the percentage of box office revenues paid to the distributor by the exhibitor. The third relevant price is the distribution fee that the distributor takes for its services. The end sum is what is left for the producer. The admission price is fixed but the other two are not; depending on the film's run the prices fluctuate according to information received from the ticket sales. The three prices are all interrelated. The exhibition contracts are complicated but similar between films. Usually only the ticket admission revenue is observable to the outsider.

2.1.2 Distribution of motion picture returns – The long tail

The Wired magazine editor Chris Anderson reintroduced the term *Long Tail* (Anderson, 2004), but the basic idea behind it has been discussed for a long time. Anderson used the term to describe a niche strategy of certain businesses, but in statistical terms the long tail means that the distribution of a function is not gaussian in nature, in other words the distribution is skewed towards the extreme outcomes.

Similar power law distribution is present in motion pictures industry. Movie returns, and consequently profits, are not following the gaussian distribution argues De vany (1999). Instead, he finds that extreme outcomes are much more likely to occur; some movies dominate the whole marketplace with huge revenues, yet many generate only pocket money. De Vany (1999) proposes that movies follow the statistics of Pareto Levy stable distribution, the hypothesis he has since tested in follow up papers (e.g. De Vany, 2006).

According to De Vany (2006), the implications of the skewed income distribution to the industry are numerous: the contracts between production companies, distributors and exhibitors are all designed to adjust to the extreme outcomes. In United States the whole industry used to be horizontally and vertically very integrated. The distributors even owned their theaters, but such ownership structures have since been banned on anti-trust reasons (De Vany, 2006). However, even today the conglomerate film studios are highly influential in America's motion picture productions. The extreme outcome becomes less of an issue with a large catalog of films, including both hits and total disasters. In North Europe production companies are often small, but their risks are partly carried by the national governments.

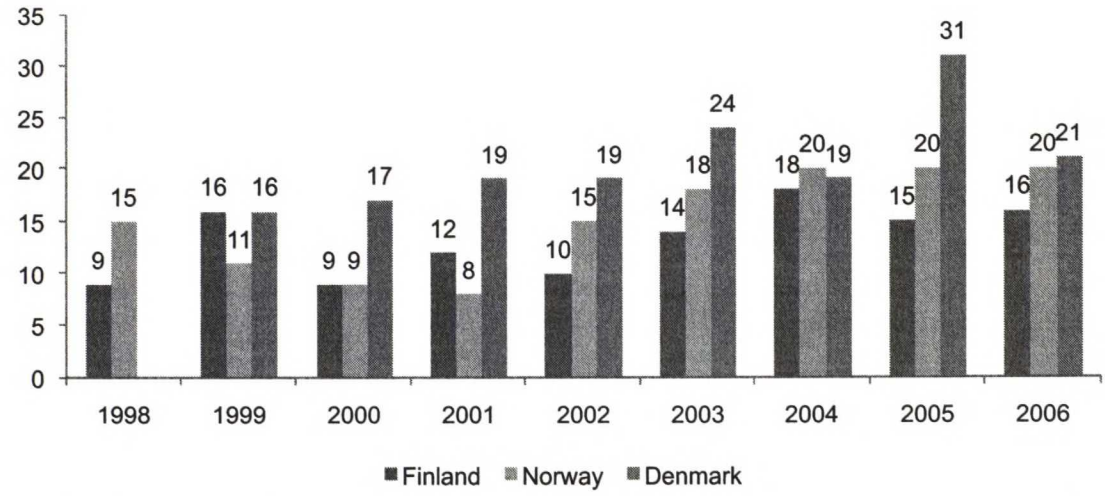
2.2 The Nordic countries

The Nordic movie markets have a few distinct qualities. The sizes of the domestic markets are quite small, and although the number of films being exported is growing the home market currently constitutes the majority of the total revenue. The finance structures are complicated: the productions are heavily supported by the national governments and private money is scarce. Motion picture finance is discussed in more detail in chapter 3.

Figure 1

Domestic new releases

The figure presents the number of domestic movies released in three Nordic countries between years 1998 and 2006.



Source: Finnish Film Foundation (SES), Norwegian Film Fund (NFI), Danish Film Institute (DFI)

The Finnish, Norwegian and Danish movie markets differ quite a bit. The total theatrical movie market size in Denmark was over twice the market size in Finland in 2006 (113 million € vs. 50 million €). Norway lays somewhere in between. The gross box office returns have remained reasonably stable during the past few years in each of the three countries, albeit admissions tend to fluctuate with the general economic conditions.

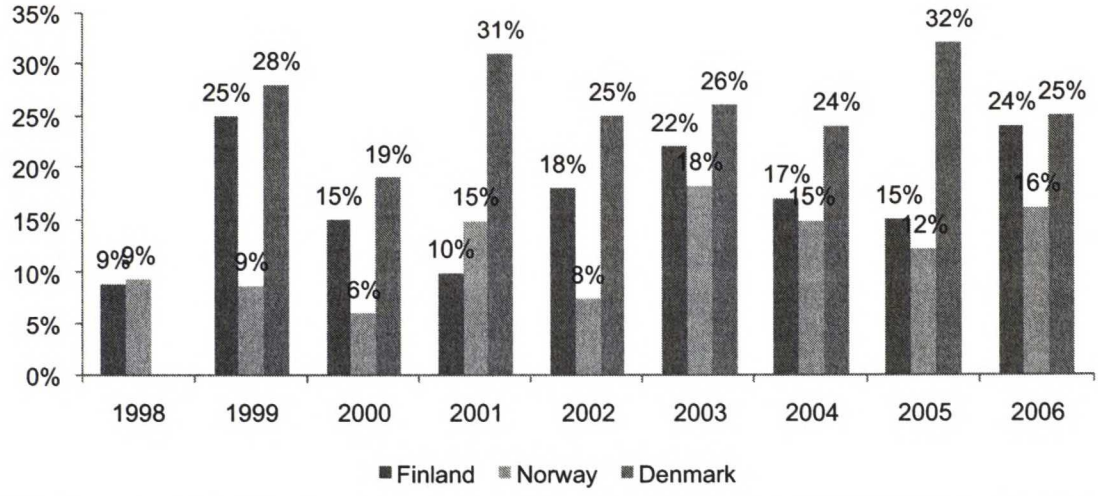
A major theatrical release of a domestic film is not a weekly event in any of the three countries included in the thesis. Denmark has the most new domestic releases followed by Norway (Figure 1). Danish films constitute a little bit over one tenth of all premieres in Denmark. The share is slightly smaller in the other two countries. The total number of new releases including foreign films varies around 200 premieres per year in each of the countries.

The audiences favor the movies made in the home country. In all countries, the domestic film's share of admissions is bigger than the pure numbers would suggest. Figure 2 shows the domestic market share. The Danish movies have received almost one third of the admissions revenue in some years during the last decade. The Finnish and Norwegian movies' share has been lower in their respective countries, but it is still quite a bit more than their share of all releases.

Figure 2

Domestic market share (%)

The figure presents the market share (admissions) of domestic movies released in three Nordic countries between years 1998 and 2006.



Source: Finnish Film Foundation (SES), Norwegian Film Fund (NFI), Danish Film Institute (DFI)

Most movies are made primarily for the home market and are never released widely to international audiences. Films that are exported are often released in one of the neighboring countries. In Scandinavian countries with similar languages crossing the border is bit more common than in Finland, although Estonia has reasonably many Finnish movie premieres. The language remains the biggest obstacle for a wide international success and acclaim. The biggest productions have sometimes used in English to overcome the language problem (e.g. the movie *Dogville* by Lars Von Trier, 2003). Animations are less problematic; the voices can easily be remade for the new release.

2.3 Subsidies

Culture is heavily subsidized in the Nordic region and different kinds of productions receive nationally sponsored funds. Movies are not different in this sense and the culture subsidies have an immense impact to the motion picture market in Northern Europe. Some movies that would not otherwise be profitable enough are produced because the government is ready to incur some of the risks involved in the production. Proponents of the public culture

subsidies argue that the size of the market is too small for the movies to survive financially without the help from the nation state.

This study evaluates what is the effect of public funding to the movie profits, providing new elements to the debate between supporters and opponents of the movie subsidies. These issues are researched from a theoretical viewpoint in the academic papers by Blaug and King (1976), Baumol and Bowen (1976) and Scitovsky (1976). Their main arguments are summarized in the following paragraphs.

Proponents of public support of performing arts have at least five relevant arguments to the debate. First, performing arts, including motion pictures, broaden the cultural options available to current and future generations, and thus improve the individuals' quality of life. That in turn leads to positive effects on their utility functions, and indirectly on their productivity (Baumol and Bowen, 1966). The second rationale (Scitovsky, 1972) is that the preferences of the average consumer of cultural products have become more demanding because of the fast industrial growth, and without the support the production of cultural products cannot keep up with the demand for them.

Third argument in favor for the culture subsidies is more abstract. It states that the subsidies must be provided for making of masterpieces that increase the influence and the prestige of the domestic culture, and are essential for the development of cultural identity. The argument's validity depends on two issues; either this national prestige indirectly enters domestic consumers' preferences, or perhaps more likely, it affects the preferences of foreign consumers by making them consume more domestic products.

A fourth rationale deals with the positive externalities that happen due to the development of artistic content. The subsidies radiate into economic activity in areas close to the cultural industry. The fifth and the last argument is the so-called "Baumol's disease", which states that the industrial revolution increased the relative costs of the cultural products compared to the more tangible goods. The government support for arts then tries to level these differences in costs.

According to Bagella and Bechetti (1999) these five arguments are strong enough to justify the subsidies for a motion picture production, if the movies in question can be regarded

as art. The idea is best explained by using a simplified model in which all movies lay on a two-dimensional product range: On the one end there are pure art movies, so called "film d'autore" movies with a low capital intensity, and on the other end "special-effects" films with a low artistic content and a high capital intensity. "Film d'autore" movies require relatively more labor and rely more on the director's idea compared to the special-effects films, where higher proportion of total production benefits from the technological advances in productivity, and the director's skills are less relevant to the final product. Naturally there are also some films that are both capital intensive and have high artistic content or vice versa.

In this scenario the five arguments in favor for the state subsidies can only be applied to movies on the artistic end of the range. This applies most evidently to the Baumol's disease argument, special-effects movies do benefit from the higher overall productivity in the economy, and government intervention cannot be justified.

In Nordic countries movies tend to lie more on the "film d'autore" end of the line, mostly due to the relatively small production sizes and the high cost of labor. In this sense the government subsidies appear to have some merit to them. The controversy over government support in movies is still an active one, for example European Union has recently demanded for Finland to modify its support schemes on competitive grounds (Helsingin Sanomat, April 14. 2008). Production support of over 50 per cent of the total cost will not be possible for most movies in near future. Moreover, during the spring 2008 a few support applications for projects by established producers were declined. It seems that not all productions can rely on public money in the future.

3 Motion picture finance

This chapter of the thesis presents an outlook on the finance of full-length motion pictures in Finland. Securing funds for movie productions can be a complicated task especially for a new film producer without much prior experience.

In individual movie projects two persons make most of the decisions that affect the outcome; the *producer* finds the financial backing, handles the communications to the outside stakeholders and hires the key personnel. The producer is involved in all phases of the movie making process, from the early development to the completion of the film. The producer essentially creates the environment for the project's successful completion. In contrast the *director* controls the artistic and dramatic aspects of the movie and guides the technical crew and the actors in their work. However their division of labor is not always that simple: the producer usually selects the director, thus he often has the absolute power over the production.

The relationship between the producer and the director is somewhat different in Europe compared to North America. For example in Finland the producer more often stays in the background and the director gives the face to the movie. Things are different in United States where the producer is quite frequently better known than the director, and the movie is regarded as his film. The implications of the difference are not necessarily large, but it could lead to the director having more power over the production in Europe, and thus leading to bigger emphasis on the artistic values in European motion picture productions.

Oksman (2002) studied the behavior and the development of producers. He finds that the producers share many qualities, and then develops a model for typical characteristics of a producer. He categorizes producers into four different types by their behavior: the artist, the professional, the analyst and the manager. Different forces drive their production decisions, and some emphasize the prediction of financial outcome more. However it is not clear whether or not even the producers know anything about the performance of their movies in advance (Ravid, 1999). In any case, one of the producer's primary tasks is to find the funds for the motion picture production.

Motion pictures are long projects and very risky endeavors as such. To minimize the risk taken by the production company movie projects are today often produced in a separate project entity. The project company structure makes the allocation of funds in an individual movie easier within the production company. In addition to the improved risk management, Finnish production companies have been increasingly interested in attracting attention from the private investors so that they would invest to the movie projects.

Figure 3 presents the stages of filmmaking. The budget of the project is set in the development stage of the production, after the producer has found a suitable story for the movie. Much of the financial backing is obtained early on in the production process, but the search for funds may continue during the later stages. The process from the first stage (development) through to the last stage (distribution) can last for years, thus the time difference between obtaining finance and receiving income is exceptionally long.

The next sections present the usual sources of funds in a motion picture production in Northern Europe. Information is gathered from the expert interviews conducted for the thesis, selected publications (see for instance Vilhunen, 2008) and from various Internet sources. The rest of the chapter is divided into four sections: public finance, presale finance (end-user finance), outside finance and other.

3.1 Public finance

This section describes the public sources for motion picture finance. Public support and funds have traditionally represented the biggest source of finance in a movie production in the Nordic countries and its influence in contemporary Nordic movie productions is immense. Both the national and the international funds are actively participating in motion picture productions, also in cooperation with each other.

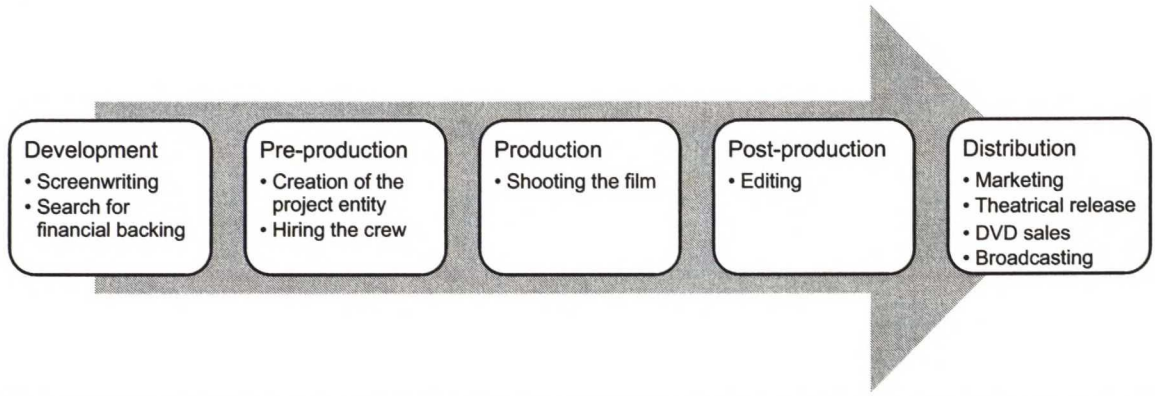
3.1.1 National support

Motion picture production is heavily supported in Europe and the Nordic countries are not exceptions to the tradition. The support is organized nationally through the dedicated

Figure 3

Filmmaking process

The figure presents the five stages of filmmaking process on a timeline.



Source: http://www.filmmaking.net

government supervised bodies. In Finland, Norway and Denmark the organizations are Finnish Film Foundation, Norwegian Film Fund and Danish Film Institute respectively. Their support is not limited to production or other financial help; instead they offer a variety of services to the moviemakers. In addition to these main national organizations there are more specialized funds as well as funds that restrict their money to movies produced in certain locations.

The Finnish Film Foundation supports and develops the Finnish film production, distribution and exhibition. Supervised by the Department for Cultural Policy in the Ministry of Education, the foundation is supported by the grants from the Finnish national lottery and from the Finnish Broadcasting Company (YLE).

In 2006 it gave 12,5 million Euros in production support and 14,3 million Euros in total support. In addition to the support given to the movie's production, the subsidies also included grants to help production companies to export their movies to the international markets and to fund the video and DVD distribution. The Finnish Film Foundation itself does the decisions about the subsidies, however they follow the act on the promotion of film art (28/2000). The production support does not require repayment.

The national movie production support in Norway is the task of The *Norwegian Film Fund*, which is supervised by the Ministry of Culture and Church Affairs. Its budget for 2007 is 292 million NOK (35 million euro), and it also supports audiovisual products other than movies, such as videogames. Almost 80 percent of its funds in 2005 were given to full-length movie productions, either as the production and development support or as the box office bonus. The support is provided as conditionally repayable loans.

The box office bonuses are awarded automatically to the theatrically distributed films as a percentage of the ticket revenue until the ceiling amount is reached. The ceiling on bonuses is calculated in relation to the producer's investment and risk.

In Denmark similar role is given to the *Danish Film Institute*. Operating under the Ministry of Culture, DFI is budgeted to provide production subsidies worth over 22 million euro in 2007. In 2006 there were 21 movies released in Denmark of which 20 received subsidies from DFI. Danish support is also repayable on generous terms.

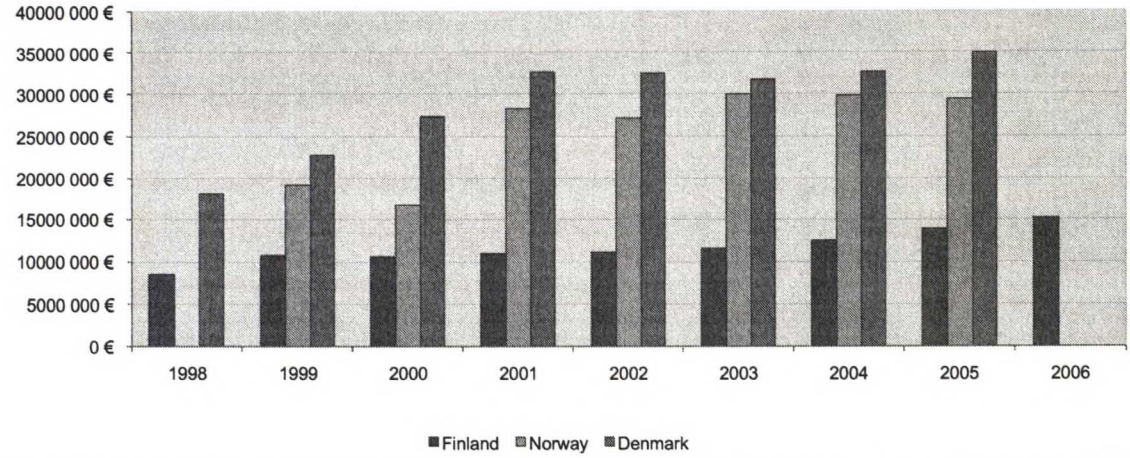
These aforementioned three organizations are the main public financiers in the three countries included in this study. Their goals and means to them are similar, however some differences exist. Figure 4 presents the budgets of the main national organizations for motion picture production in Finland, Norway and Denmark. Despite the similar population among the countries, both Norway and Denmark distribute much bigger figure of state funds to film production compared to Finland. The bigger state support in Denmark and Norway has at least contributed to the difference between the countries in the quantity of new domestic films, size of their production budgets and films' international recognition. The more ample public funding in Norway and Denmark compared to Finland has also allowed for support schemes where the application process is made more straightforward or support is even automated[1]. The Finnish government has set a 15 % to 20 % goal (Target Programme for Finnish Film 2006 – 2010) for the market share of domestic movies, with the current budget reaching that goal requires emphasis on movies that have high chances of succeeding in the domestic market.

[1] 60 - 40 scheme: if 60% of total budget is secured, the Danish Film Institute will finance the remaining 40%.

Figure 4

Budget of the national supporter

The figure presents the budgets of the main public supporters for motion pictures in three Nordic countries for years 1998 to 2006. The organizations for Finland, Norway and Denmark are Finnish Film Foundation, Norwegian Film Fund and Danish Film Institute respectively.



Source: European Audiovisual Observatory KORDA database

The share of national public funding is approximately one third of the total production cost. In Finland the share national finance has been diminishing in the past few years, which eventually lead to the movie producers' strike in the Fall 2007. The support for 2008 was increased and the strike ended in a few months, but the discussion in the media over the culture subsidies is ongoing.

There are a number of other national funds providing finance to the movie productions. Most of them oblige the support from the national fund in addition to the other requirements they may have. Sometimes limited to the movies of certain genre or type, for example short movies, or by the production location. These funds are important source of finance for smaller productions with narrow chances of a wide theatrical release. However, of total motion picture production finance their role is at most five per cent (Vilhunen, 2008).

3.1.2 International support

Co-productions in the European motion picture jargon are movies that have obtained (public) support from more than one country, albeit the definition of the term is slightly

different depending on the source. Each film that searches and obtains funds from countries other than their domestic market is considered to be a co-production. International support is practically only available to the movies that could generate at least moderate interest in the supporting country. Terms for the co-production subsidies vary between countries; some organizations require repayment whereas some do not. The co-production contract might include the exhibition rights. The motivations behind starting a co-production vary; in addition to the need for more funds, international filming locations and artistic reasons can increase the likelihood for the producer to search for international support (Hemilä, 2004).

In North Europe the *Nordisk Film & TV Fond* provides support for the feature films, as well as for the TV productions and documentaries, produced in Denmark, Finland, Iceland, Norway or Sweden. The fund requires that the movie will be distributed in at least two Nordic countries, and that a broadcasting contract is signed. The fund's share of the total production funds that are given to Finnish feature films has been in the past few years somewhere between 2 to 4 percent (Vilhunen, 2008).

Eurimages is a Council of Europe fund, similar to the national supporters but on a European scale. According to its own definition it *"aims to promote the European film industry by encouraging the production and distribution of films and fostering co-operation between professionals"*. For a project to get the Eurimages support it requires that the movie is co-produced between some of its 33 member states. It can provide up to 15 percent of the production budget of the qualifying films, but of the total Finnish film production money their share is negligible. Its support is often given in the form of a soft loan, and it is repayable without interest.

EU media programme is European Union's support program for audiovisual projects in Europe. The difference with Eurimages is that it is especially designed to improve the international circulation of audiovisual works within EU countries, albeit some movies have also received support for the domestic markets. The program provides funds for the training of professionals, for distributing and promoting films, and for film festival organizations. It does not give direct production support to the individual movies. Media 2007 was launched in early 2007, and will continue until 2013.

In Finland the total share of public support including international support averages historically at around 50 percent (Vilhunen, 2008). Practically every movie produced in any of the three countries of the thesis that is distributed widely in theaters has received some sort of public support at some point of its lifecycle.

3.2 Presale finance

Sometimes the producer can pre-sell the distribution or the exhibition rights to the distributors, broadcasters or to other ancillary markets before the production has finished. It is called presale or end-user finance. Pre-selling is primarily possible for the established producers, as the buyers have to trust that the project will be completed. Part of the value of the sell is often payable on delivery, so a producer requiring funds must finance the value of the sale until delivery, usually through a loan. Although not traditional pre-sells, the sale of merchandising rights and corporate partnerships are additionally discussed in this section.

3.2.1 Distributors

A film distributor is a company that acts between the production company and the film exhibitor to secure that the movie is released in theaters. Historically the value of pre-sell contracts with the distributors as a share of total production cost ranges between four to ten percent (Vilhunen, 2008). The domestic distribution contract is secured usually early on in the film's production cycle. The same company sometimes handles the distribution and the cinema exhibition of the motion picture.

3.2.2 Broadcasters

Broadcasting companies i.e. the network television companies are a major source of funds in movie productions in the Nordic countries. They are present in the production early on in its lifecycle, and especially the domestic broadcasters can use their influence on how the movie will turn out to be. Some broadcasters also offer consulting services and use of their international connections to help the moviemakers. Broadcasters' share of total finance is approximately 15 %, which includes the domestic pre-sales. Selling the international broadcasting rights early on is not currently very common and it contributes only little to the

total funding. Broadcasters also fund outside productions that are not even planned for a theatrical release; of those movies their share of production costs is much higher. In addition TV movies are produced in-house.

3.2.3 Ancillary end-user finance

Obtaining end-user financing through video and cable companies is called ancillary end-user financing. Since video and cable companies do not rely on film product at the theatrical market, they are considered ancillary markets. The role of these secondary markets is getting greater, thus allowing for new sources of finance to the producers.

Internet and video on demand services are also gaining momentum, and they might become more important in the future also as means to find production funds. However, at this point the economic model for profitable Internet distribution is still not completely worked out. Nevertheless, the importance of ancillary markets in comparison to broadcasting and even to theatrical distribution appears to be growing, which can eventually lead to major changes to the current motion picture financing and income model.

3.2.4 Corporate partnerships

Many companies are looking for new ways to finance their movies, and one prominent source is partnerships with private companies. They can take many forms, including marketing campaigns with movie's intellectual property and in-movie advertising. The in-movie advertising was widely discussed in public media when a movie about a Finnish rock band and its lead singer (*Ganes*, 2007) included sequences where the actors used lines that are well known from TV-advertisements. Despite the minor public outcry, it is believed that these sorts of agreements will become more common in the production of motion pictures. Currently, however, the share of corporate partnerships remains at a few percent of the total production cost.

3.2.5 Merchandising

Merchandising is another reasonably new source of finance in the Northern European movie production. Selling the merchandising licenses to a toy company or for example to a videogame publisher is becoming more frequent, although currently its role is quite minuscule. Regardless, especially animations and children movies have been able to bring its characters and brand names out of the silver screen to the shelves of a local supermarket.

3.3 Outside finance

On most occasions the production budget cannot be financed with public support and presales alone. The finance round of the motion picture production is then completed either by finding private investors that are willing to fund the production, by raising debt or finally by investing own money to the film.

3.3.1 Private investors

Constant search for new investment opportunities have increased the share of the outside private money in movie productions. Currently the private investors hold only a minor role in the financing of the film production (Vilhunen, 2008). The private investor can be a company or an individual person. Currently there are no investment companies or funds that specialize to investing in Finnish motion picture productions. The private investments to the Finnish movies have been infrequent and mostly comprising of actions by a few active individuals. According to the experts interviewed, there is a lot of room for growth, but the small size of the market is considered to be a limiting factor. In addition the production companies are often very small, and may not know how to make it easier for the private parties to invest in their movie productions.

3.3.2 Debt

Depending on how the movie production is structured the production company can obtain a bank loan that is supported by the company's own assets or by the assets of the

project entity. Private investments can also take the debt form if the production company or the film entity releases fixed coupon bonds, but such arrangements are not often seen.

3.3.3 Self-finance

Self-finance is placed in the outside finance section because of its close relation to privately invested money. Movies can also be self-financed, and its proportion of the total production cost can vary wildly. The production company might have free cash from the previous projects to invest it to their new production. On the other hand many starting moviemakers seldom have the resources to obtain required financing to their productions. The producer can finance the movie by using his personal savings, credit cards and the help of family. A perfect example of this kind of production is the Finnish movie *Star Wreck*, which was distributed mainly in Internet.

Financing the movie independently does bring the advantage of total artistic control, without losing any of it to outside financiers. In some cases, as Fee (2002) argues, it can be costly to the movie if much of the control is being held by the outsiders. On average the share of self-finance in the Finnish productions is a little over ten percent, which includes the short-term bank loans (Vilhunen, 2008).

3.4 Other

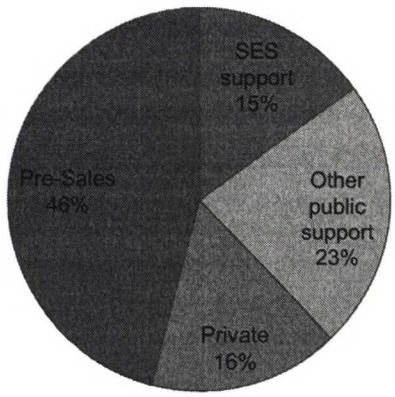
3.4.1 Studios

A movie studio is a major film production company. Studio financing is not relevant in Europe, but in United States, namely in Hollywood, major studios play the most important role in production and financing motion pictures. Practically all the biggest productions are either financed or produced by large studios. The studios also act as main distributors of films in United States. Private production companies seek for studio's support on an early stage of the production. However, there are no similar film production conglomerates of comparable power in European motion picture market. In Europe their role is mainly filled by the public organizations and by the broadcasters.

Figure 5

Movie example

This chart and table presents the sources of production funds and key information for the movie *Jade Warrior* (Jadesoturi). *SES support* is the share of production budget covered by Finnish Film Foundation, whereas *Public support* includes funds from other Finnish and Estonian public financiers. *Pre-Sales* denotes the finance from sold rights from all over the world, including but not limited to Finland, China, Benelux countries and Germany. *Private* is the share of money received from private investors in Finland, China, the Netherlands and Estonia.



Production Budget:	2 800 000 €
Production Company:	Blindspot Pictures Oy
Genre:	Action
Release:	13.10.2006
Director:	AJ Annila
Cast:	Tommi Eronen, Markku Peltonen, Jingchu Zhang, Krista Kosonen
Country:	Finland
Runtime:	110 min
Age rating:	K-11

Source: Blindspot Pictures Oy, Finnish Film Foundation

As a conclusion to the chapter, the figure 5 presents an example of a Finnish movie and its financial backing. The movie in question is an action adventure *Jade Warrior* by the first time director AJ Annila. By any means it is not a traditional Finnish movie production, being very international both in production and in distribution, yet it shows that there is a variety of financing options available even for the Finnish movie producers. Widening the financial base of the productions is a trend that is seen in contemporary movie productions, and for instance today's Finnish Film Foundation tries to encourage the search for alternative sources of finance.

The ways to finance a motion picture production in Finland are now identified. The following chapters of the thesis try to find out what kind of movie productions are the most successful in both financial and other terms.

4 Literature review

This chapter presents the past research done on financial motion picture research. Financial motion picture research has gained much more attention during the past few years due to the growth of the industry. The chapter is divided into two sections. The first section presents a general background of financial research of motion pictures, and the second section focuses to the international research of motion picture success determinants. In the end of the chapter a summarizing table of important research is presented.

3.1 Background

Good starting point in solving any entertainment related financial research problem is Harold L. Vogel's "Entertainment Industry Economics: A guide for financial analysis". It covers a wide array of topics; in addition to motion pictures, it devotes chapters for instance to television broadcasting, music, Internet, book publishing, sports and performing arts. Despite the sheer scope of the book it manages to be quite comprehensive. According to the book the economics of entertainment consumption are changing; leisure becomes more valuable as the wages rise, and people are ready to spend more for their entertainment.

According to a Finnish study (Toivonen, 2006) despite higher living standards and income, spending for social activities such as movie theater visits is decreasing. He finds that the higher income is mostly spent for privatization, meaning the spending for your own home. His explanation for such development is that the better the living standards, the more you are willing to use your leisure time there. For instance the home theaters are getting almost as good as the real movie theater outside. For motion picture total income it is not necessarily a bad thing, if the box office receipt sales actually decrease, they might be replaced by higher DVD-sales and rentals.

Despite the increasing weight on ancillary markets of total motion picture returns, the box office admissions are still generally regarded to be at the center of the movie business. They determine if the film has any chances of succeeding in the long run. Relevant research by Litman (1979) showed that theatrical performance was an important predictor of

primetime television ratings. It is thus safe to say that the box office performance plays a critical role in determining the financial success of the movie.

Most economic research on motion pictures is performed with North American data, however number of academic papers from other places of the world is increasing. Bagella et al. (1999) use Italian data in their study, and they include the investigation of effects to movie performance of motion picture subsidies. Additional international research on public policy and the financial performance of motion pictures is since studied in Germany by Jansen (2002).

In Finland the financial research for motion picture performance is currently non-existent. Motion picture research in Finland has traditionally been studied in Finnish universities as a part of the media and culture studies, but the financial and economic side of the industry has been left almost intact in the academic world. One of the few, Keto (1974) studied the demand for motion picture tickets in Finland. His study also presents the economic history of motion picture business in Finland starting from the early days of the film industry. Later there have been studies about the international distribution of Finnish films (e.g. Hemilä, 2004).

3.2 Research on success determinants of motion pictures

The earliest studies of the determinants of motion picture profitability include Litman (1983), who finds that winnings or nominations for Academy award are significantly related to revenues. Using a sample of most successful films from 1950s, 1960s and 1970s, Smith and Smith (1986) find mixed results. In the 1960s awards appear to have significant negative effect, yet in 1970s the effect is positive. More research papers with similar methods were later written, including Litman and Ahn (1998), Prag and Casavant (1994), Ravid (1999), Chang and Ki (2005). These studies apply econometric methods and estimate film's success mainly on the basis of box office receipts. Generally these studies use ordinary least squares regression technique with a different number of variables explaining the success of an individual movie. Despite the different datasets, their results are mainly consistent with each other. Relation between film's budget and its cross ticket sales, and the effect of positive or

negative reviews and whether it has a star in its cast is present in the results. In the following paragraphs I will review the findings of earlier studies in more detail.

Many scholars (e.g. Basuroy et al., 2003) have found the production cost to be important predictor of film's box office revenue. Bigger budgets allow more filming days, more expensive sets and improved special effects that in turn, directly or indirectly, generate more interest at the theaters. However, return on invested money is not necessarily any better on big productions (Ravid, 1999). The movie product, an experience good, is essentially the same film roll or DVD irrelevant of production size, and regularly small budget films surprise at the theaters (De Vany and Walls, 1999).

Maximizing revenue is rarely the final financial goal for moviemakers, profits and returns are naturally more important. Some studies (e.g. Ravid, 1999) have included different measures for return on investments and profits. However studying profitability is extremely difficult: production companies do not report information on individual projects. Thus a rough approximation for profit is used in various studies (e.g. Ravid and Basuroy, 2003).

A paper by Fee (2002) studied the effect of equity control in motion pictures. The paper proposes that outside investor control creates both costs and benefits in movie productions and the financing arrangement are structured accordingly. He uses American data that includes movies that are financed either independently or backed by a major studio. His empirical findings support the original proposition.

Public production support of motion pictures is one the primary interest of this thesis due to its immense role in North European movie productions. As the majority of past studies have focused to North America where motion pictures are financed mostly with private money, the support's implications to the movie's financial performance have little empirical evidence. Bagella and Bechetti (1999) find that the subsidized movies do not perform significantly worse or better than other movies, but they are generally much smaller productions. In their sample only a small portion of the movies had received public subsidies. A doctoral dissertation from Germany (Jansen, 2002) finds that public support does not affect directly the box office performance, but suggests that production companies with a history of many hit movies are more likely to be successful at making movies, and thus may not need as much public support.

Movie genre has received much attention from scholars, but the results are not conclusive and vary between studies. Movies labeled as "Drama" are found to be less successful at the box offices (e.g. Chang and Ki, 2005), whereas comedies are found to be performing better than the average (Litman, 1982; Bagella and Bechetti, 1999). Other researchers (Litman and Kohl, 1989) find that Sci-fi and horror genres are positively related to the box office performance.

A few studies have considered the effect of age ratings to the movie's performance. A paper by Ravid and Basuroy (2004) tries to explain the "R-rated puzzle" that is prevalent in many other recent papers. The "R-rated puzzle" is used when there is a higher proportion of movies that include violence, sex or gore than is economically reasonable, as movies with lower age rating have historically performed better. According to the study there are some good reasons why those movies are so popular among the producers: they tend to lose money less often and their returns are easier to predict even if they are not huge hits. Again, not all studies have found the age ratings significant (Litman and Ahn, 1998).

The release timing of the movie is a contributing factor to the movies box office success; according to Litman (1998) summer release was empirically supported to lead to a better financial result. Other periods were not found to be statistically significant. Basuroy et al. (2003) uses coefficients based on historical data instead of dummy variables to control the release time's effect on movie's performance.

The number of opening screens, and the dynamics between the width and the length of release have been the focus for some scholars. Elberse and Eliashberg (2003) find that the number of opening screens and revenue are highly interrelated, and they build a conceptual framework of movie returns based on the opening week revenue. Several papers have found the number of opening screens and the box office success to be related (e.g. Litman and Ahn, 1998; Sochay, 1994).

Another subject of interest that has been included in many previous studies is whether the movie is a sequel or a prequel to an existing film. Many researchers have found that the sequels have a positive impact to the revenues (Ravid, 1999; Prag and Casavant, 1994). Ravid (1999) further elaborates the connection: the moviemakers try to capture the past success by

copying the formula from earlier release not necessarily knowing what made the movie a hit. The sequels tend to perform better than the average movie, but usually not as well as the original one despite the often-increased production budget (Basuroy et al., 2004).

The effect of the star power in the economy has been studied quite extensively early on for instance by Rosen (1981). More recent studies (Ravid, 1999; Basuroy et al., 2004) have focused on motion pictures and how the star actors and directors contribute to its financial success. Ravid (1999) examined the role of stars in the motion pictures by presenting two alternative explanations. Either there is a positive signaling effect by hiring a star as the project is likely to be of better quality, or stars capture most of their expected value added to the production. He found the latter hypothesis to be consistent with his empirical findings. Only a few empirical papers find significant results on star power (Sochay, 1994; Litman and Kohl, 1989), most have not been able to verify the effect of stars (De Vany and Walls, 1999; Chang and Ki, 2005).

Basuroy, Chatterjee and Ravid (2003) investigate in their paper how critical reviews affect the financial outcome of motion pictures. The division of critical reviews to either influencers or predictors was first proposed by Eliashberg and Shugan (1997), and Basuroy et al. (2003) followed their theoretical foundation. When an influencer voices an opinion, people should follow it. Basuroy et al. (2003) test which role the reviews have by hypothesizing that if the reviews have influencer role their effect on box office admissions should be greatest on the early stages of the films run. They find that the critics have a dual role as both influencers and predictors, and negative reviews hurt revenues more than the positive help in the early weeks of a movie's release. Several scholars report that the overall effect of reviews to revenue is statistically significant (e.g. Eliashberg and Shugan; Prag and Casavant, 1994). In addition Chang and Ki (2005) find that the audience rating is also related to box office revenue.

The economic impact of winning an award has been analyzed in a few studies. Litman (1983) finds that the Academy award nominations or winnings and box office returns are significantly related. Smith and Smith (1986) use a sample of most successful movies from three different decades, and find rather oddly that in the 60s winning an award has a negative effect on revenues but a positive one in the 70s.

Different angle for economic research in the movie industry can be achieved by focusing on the distribution of film revenues. Using large samples, De Vany and Walls (1999 and 2002a) noted in their study that distributions of film revenue are not following the normally distributed probability function. Compared to this study their data set includes much less information on individual movies. De Vany and Walls (1999) explain that the stable distribution model gives more accurate results thus making it the appropriate method of estimating the performance of movies. It is not uncommon for a huge hit to be able to have higher revenue than the model that uses normal distribution would estimate. This leads to a skewed distribution of returns – many films flop completely and some are phenomenal successes, rather than lots of releases that perform in an average way. Thus, their finding that the general OLS normality assumption is violated in their data, they employ sophisticated estimation techniques in order to overcome methodological problems. Regardless, De Vany et al (1999, 2002a and 2004) show results that are quite similar to earlier studies; they find that longer run time and wider release are the main contributors on how well the movie performs financially.

Table 1 summarizes the findings of the selected empirical studies. The sample sizes have varied across papers, but the general rule is that the sample size and the number of variables are negatively related.

Table 1

Summary of selected empirical papers

This table presents the summary of findings of major studies. The dependent variable in the study is box office revenue unless otherwise mentioned.

	Ravid (1999)	*Bagella and Bechetti (1999)*	*Elberse and Eliashberg (2003)*	*Basuroy, Chatterjee and Ravid (2003)*	*Basuroy and Ravid (2004)*	*Chang and Ki (2005)*
Data	USA	Italy	USA	USA	USA	USA
Number of films	175	977	164	122-162	175	463
Production cost and finance	Production cost significant.	Government subsidy not significant. Production house mainly irrelevant.	Support for the importance of production cost.	Production cost significant.	Production cost significant.	Production cost significant.
Film's objective content	Low *PG* age rating positive effect.	Comedies generate higher revenue.	-	No significance for age rating.	Violent films provide high revenues, but are not great investments.	Dramas have significant negative effect. Ratings found significant
Distribution	Seasonality taken into account.	-	Opening screens and revenue are highly interrelated	Number of screens significant.	Seasonality taken into account.	Holiday release periods significant.
Star power and marketing	Sequel is significant. Stars have no significant effect on revenue.	Actor and director popularity have an effect on revenue.	Advertising predictor of opening week performance.	Star power can lessen the impact of negative review.	Award winning stars have no significant effect.	Sequel is significant. Star power not strong enough to influence.
The effect of reviews	Number of reviews is significant.	-	Reviews have influence during the early part of the film's run	Negative reviews influence the revenue more than positive ones.	Number of reviews is significant.	Reviews predictors rather than influencers.
Perceived quality	-	-	-	-	-	High audience rating of the movie related to revenue.

5 Hypotheses

This chapter presents the hypotheses of the study. The hypotheses are divided into six categories: finance, objective features, distribution, marketing, information and artistic quality -related hypotheses. They are discussed in that order.

5.1 Finance-related hypotheses

The hypotheses presented here deal with the size of the production, financing sources of the film, and its effects on the movie's performance. The amount of money available in the production has many consequences to the movie: certain genres are unattainable for small productions and choosing the right cast is much easier with a wider budget. The source of the financing might also have a tangible effect on the movie's performance. Not necessarily directly but depending on the availability of financing, different kind of productions are possible.

H1: *There is a positive relation between the size of the production and the success of the movie.*

This hypothesis is well backed by the earlier studies especially if the success is defined by the admission figures, but even it is not as certain as it might seem. The product itself, a finished movie, is always essentially the same provided that the movie is printed on film no matter how much money was used in the production. Movies with budgets next to nothing have had higher revenue than the movies with very high production values. Regardless in general the movies with bigger budgets tend to attract bigger audiences and collect more awards.

H2: *There is a negative relation between the amount of public support and the success of the movie.*

The hypothesis states that the size of the public funding has an influence to the movie's success likelihood. This assumption is based on the idea that the public financiers are

not necessarily as good as the private sector at assessing the possibility of a financial success, thus being inefficient in allocating their funds. Moreover, they might have goals other than optimized box-office performance behind their support decisions.

H3: *International co-productions are more successful than the purely domestically financed motion pictures.*

Obtaining finance from another country requires a lot work and good connections. The same is true for producing a successful movie. I hypothesize that these two statements are interconnected and successful movies are made by those able to attract foreign interest.

5.2 Film's objective features -related hypotheses

The innate qualities of the motion picture are also of importance when a potential member of the audience is selecting what to see. They are often decided based on the preferences of the filmmakers and chosen before the start of the production.

H4: *Movie genre has an effect on the movie's success.*

The evidence from the earlier studies is far from conclusive, but even so I would expect certain genres to perform better than the average movie. Most notably comedies are expected to be successful in theaters based on several papers (Sochay, 1994 and Wyatt, 1991). Furthermore documentaries should fare worse than the rest due to their limited appeal in the big screens.

H5: *There is a positive relation between the movie having a low age rating and the success of the movie.*

The age rating has been shown to have a clear effect on the movie's success by several studies (Basuroy et al., 2004). The obvious explanation is that the movie has a bigger potential audience. The bigger is the pool of potential customers, the bigger are the sales. However as the ratings depend on the movie's content, movies with lower age ratings are not allowed to have certain elements included, which might in turn hinder sales.

H6: *Movie running time is negatively related to the success of the movie.*

The length of the movie is not generally expected to have much influence on its performance. However, longer movies require more resources at each point of the production: for instance the filming takes longer and the post-production requires more time. These expenses could effectively put less weight for other perhaps more important aspects of the movie making.

5.3 Distribution-related hypotheses

When the movie production is closing to a completion, the distribution of the final product becomes topical. How is the motion picture distributed to the viewer may influence its success probability.

H7: *Time of release has an effect on the success of the movie.*

Movie theaters are full in January and February, and at least traditionally less so in the summer. The movies released in the beginning of the year should therefore enjoy bigger audiences. However the number of releases is also lower during off-season. Even so, I expect the wintertime release to be positively related to box office performance.

H8: *There is a positive relation between the number of opening screens and the success of the movie.*

This hypothesis is also based on earlier studies (Iberse and Eliashberg, 2003). When the movie opens in multiple theaters, the ticket sales should turn out to be better. The argument is rather straightforward: with larger supply of seats more people can see the movie right away. More theaters also mean bigger market coverage. However, a big opening weekend might not result in overall success, as the sales can sometimes slow quickly.

5.4 Marketing and brand -related hypotheses

Hypotheses presented in this section have all something to do with the marketable qualities of the movie. The brand value is the primary force that can be used to draw people to the theaters.

H9: *There is a positive relation between the movie being a sequel or a prequel and the success of the movie.*

The box office success and the marketing push of the previous movie or movies in the series is hypothesized to increase the likelihood of a successful release. In addition Ravid (1999) proposed more abstract rationale behind the assumption that being a sequel will increase revenue; Even if there is no quantifiable variable that can predict success, some movies happen to create such a perfect mix that works in the movie theaters. In these cases one should try to create the same success again by reproducing the same movie formula as closely as possible. Argument against the hypothesis might be that the sequels are not successful because in general they tend to be more expensive as the cast can capitalize on the success of the first movie.

H10: *Having a star in the movie has a positive effect on the success of the movie.*

The hypothesis is based on previous studies (see e.g. Rosen, 1981; Ravid, 1999). Having stars in the cast should be beneficial to the movie due to the marketing help that the stars can provide. Furthermore, highly regarded directors and actors can contribute to the quality of the movie and they act as a signal of an overall well functioning production.

H11: *Bigger marketing budget has a positive effect on the success of the movie.*

Marketing is the most direct way to influence the movie's behavior in the box office. Advertisements and other marketing push generally increases the sales of a product and motion pictures are expected to act in the same way. On the other hand it is likely that putting more money into marketing does not increase returns indefinitely, the marginal value of

additional euro into marketing is probably diminishing. Even so, I expect the marketing budgets to be relatively small, thus the bigger it is the better the movie performs financially.

5.5 Information-related hypotheses

The information available from objective sources is scarce, but its value to the moviegoer is potentially big. The following hypothesis is about the information flow.

H12: *There is a positive relation between favorable reviews and the success of the movie.*

Reviewers are among the first who see the final product. Those reviews are often the sole source of information when the customer is deciding which movie to see. As a professional analyst of the quality of a movie, she should also be able to determine whether the movie delivers its promise of a good entertainment. The reviewer's rating indirectly works as a proxy for the movie's entertainment value. Thus the critics' reviews have a dual role of both a predictor and an influencer.

5.6 Artistic quality –related hypothesis

The division of motion pictures to art movies and commercial releases is not often a very beneficial one and will sometimes lead to never ending debates about the definition of art. Meaning of "artistic quality" in this thesis is an overall succeeding production where the end result is more than the sum of the ingredients.

H13: *Movie's quality and its success are related.*

A good movie is most of the time better entertainment and value for your time and money than a bad movie. The better the movie is more likely it is that the word of mouth starts to spread and the theaters become backed. Thus my assumption is that those movies are performing better compared to the other movies. However for filmmakers this hypothesis is of limited value; the quality of the movie is hard to replicate and only known after the production is complete and the movie distributed to the market.

Table 2

Summary of hypotheses

This table presents the summary of the hypotheses used in the thesis.

Finance-related hypotheses	
H1	There is a positive relation between the size of the production and the success of the movie.
H2	There is a negative relation between the amount of public support and the success of the movie.
H3	International co-productions are more successful than the purely domestically financed motion pictures.
Film's objective features -related hypotheses	
H4	Movie genre has an effect on the movie's success.
H5	There is a positive relation between the movie having a low age rating and the success of the movie.
H6	Movie running time is negatively related to the success of the movie.
Distribution-related hypotheses	
H7	Time of release has an effect on the success of the movie.
H8	There is a positive relation between the number of opening screens and the success of the movie.
Marketing and brand -related hypotheses	
H9	There is positive relation between the movie being a sequel or a prequel and the success of the movie.
H10	Having a star in the movie has a positive effect on the success of the movie.
H11	Bigger marketing budget has a positive effect on the success of the movie.
Information-related hypotheses	
H12	There is a positive relation between favorable reviews and the success of the movie.
Artistic quality –related hypothesis	
H13	Movie's quality and its success are related.

The table 2 presents the summary of the 13 hypotheses of this study. The methods and the data for testing the hypotheses are discussed in the next chapter.

6 Data and methodology

This chapter presents the data and the methods of the study. The chapter begins by presenting the conceptual model followed by a data description that includes the definitions of the variables employed in the study. Next I explain the methods of the thesis. This study uses two separate datasets, a statistical dataset that includes movies from three Nordic countries and a qualitative data set of expert interviews. The latter is described at the end of the chapter.

6.1 Conceptual model

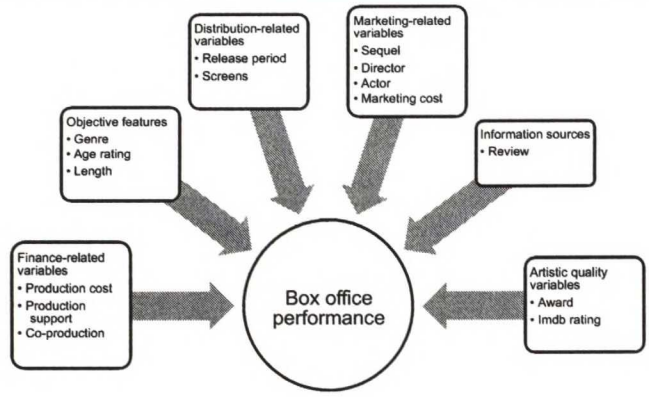
I use a conceptual framework adapted and modified from previous literature (see Chang and Ki, 2005) as a basis for determining the success of a motion picture production. As the previous chapter hypothesized, the key factors influencing the success of the movie are determined by 1) finance-related variables, 2) objective features, 3) distribution-related variables 4) marketing-related variables, 5) information sources and finally 6) artistic quality variables (Figure 6). Groups numbered 1 and 6 are my own additions to the model used by Chang and Ki.

The reasons behind the division of variables into these six categories go as follows: Variables that are involved with the financing the movie belong to the first group. Marketing-related variables have qualities that can be used to attract viewers, but are not intrinsic to the movie like in the objective features group. When the film has completed production there are still decisions to be made that have an effect on the film's success probability. Distribution-related variables deal with how the motion picture is released. Self-explanatory information sources group has only one variable, Reviews, albeit IMDb rating could also be included there. Artistic quality group refers to the variables that have information on the accomplishments of the production but are available only after the film's release.

Figure 6

Conceptual framework

This figure presents the conceptual framework of the relationship between the variables used in the study.



6.2 Quantitative dataset

Comprising of movies produce in Finland, Norway and Denmark, this thesis uses an original dataset that is compiled from several sources. Key financial data was provided by the national film organizations responsible for primary financial movie support in the countries included in the study. Each country reports their figures little bit differently and even inconsistently between years, which meant a lot of time had to be used to make the data as consistent and as complete as possible. The foundation of the dataset is the supplied financial information on the production budget, the amount of public support and the domestic box office revenue of each movie. Other sources that are described in variable definitions are used to complement the data, making it a unique dataset not used before in a financial research.

The dataset includes 394 movies produced in Finland, Norway and Denmark. Of the total sample 113 (27%) were released in Finland between 1998 and 2007, 177 (45%) in Norway from 1993 to 2006 and 104 (26%) in Denmark 2001-2007. The sample includes more than 80 percent of the major domestic movie releases in the three countries during the time period. The table 3 presents the sample description. All monetary values from Denmark and Norway were converted to Euros and corrected for inflation. Correlations between the variables are presented in the table 4.

The inclusion of movies from three different countries and markets does have its methodological difficulties in making them comparable, but overall the benefit of being able to increase the sample size and making comparisons between similar but different publicly supported movie markets outweigh any concerns.

6.2.1 Variables used in the study

Domestic box office. The variable denoted to the box office receipt revenue includes the domestic box office revenue from the film's production country. If the actual figure is not available for an individual movie, I use the average ticket prices and the admission figures to estimate the correct value.

International box office. International markets are within the reach of many productions. The study uses the *Lumiere* database of the European Audiovisual Observatory to obtain this data. The data is limited to the European admissions from 1996 onwards and the coverage is not complete for the countries that are included. Average ticket prices of the countries in question are used to calculate the box office revenue. Despite these shortcomings of the data source, having an international market included in the study is essential. However the interpretation of the results should be cautious. The Total box office is the sum of the domestic and the international box office revenue.

Production cost. Production cost or negative cost is the budget of the production. The figure does not include the marketing or the distribution costs, thus it is limited to the costs incurred in the actual production of the motion picture.

Rate of return. Another dependent variable is calculated by dividing the revenues by the production costs (Total box office / Production cost). Using the variable requires a few assumptions: the revenue available to the production company is a constant proportion of the gross box office revenue and actual costs including the marketing and the distribution are a constant proportion of the production costs. For a more thorough discussion consult a paper by Ravid (1999). Absolute return is similar but instead of dividing Total box office by Production cost, it is their difference (Total box office - Production cost). The same set of assumptions is required.

Production country. The motion picture markets of the three countries are similar, but not identical. This dummy variable is used to control and analyze those differences.

Production Support. This variable is the support given to the movie production by the national film fund. Each country has a slightly different support programs but generally they work under similar rules and their comparison is meaningful.

Co-production. The motion pictures that are co-financed with one or more countries receive a value of one. The information is collected from the *Lumiere* database of European Audiovisual Observatory.

Marketing cost. This variable denotes the marketing budget of the movie. Due to the data being only available for some of the Finnish movies, the results obtained must be interpreted carefully. Marketing support is the financial support of the national organization given to improve the marketing of the movie. Limited to the same set of data as the Marketing cost variable, its usefulness is restricted.

Review. The variable is a figure between 0 and 1 and is obtained from the local major daily newspaper: *Helsingin Sanomat* in Finland, *Politiken* in Denmark and *Aftenposten* in Norway. The amount of reviewers used was kept as low as possible, however not every reviewer rates all of the movies, which is why multiple reviewers had to used. Because of the restrictions imposed by the longer time period in the Norwegian data, the reviews before the year 2002 could not be obtained. *Aftenposten* and the Danish newspapers use the scale of 1 to 6 whereas *Helsingin Sanomat* has a 5 star system. For instance a Danish movie that got three points in a review is given the value of 0.5 and a Finnish movie with the same score of three transforms to 0.6.

Screens. A large number of opening screens is naturally necessary for a big opening weekend. However it may not be as significant in the long run, as the movie might die quickly in the theaters if the reception is not favorable. The variable is a figure for the number of films in the circulation on the opening day. It is not available on Norwegian data.

Length. The variable is the running time of the movie in minutes. The data does not include short movies, thus most of the movies are somewhere between 70 and 110 minutes long. The documentaries are shorter in general; the running time of those movies is on average approximately one hour.

IMDb rating. The international movie database lets users to score individual movies on its website on a scale from 0 to 10. The problem with the Nordic movies is that there are not that many active participants reviewing them. Some of the films in the sample had received only a few ratings. Another problem is that the average IMDb user might be a good representative of an active hobbyist but they may not represent everyone.

Award. If the movie has won either the *Jussi* Award (Finland), the *Amanda* Award (Norway) or the *Bodil* Award (Denmark) in the best movie category, the movie gets a value of one and zero otherwise. Jussi, Amanda and Bodil are the primary movie awards in their respective countries.

Director. The director variable also uses the *Jussi*, *Amanda*[2] and *Bodil* awards: if the director has won one or more awards before directing the movie, the director is regarded as a star with marketing value. The variable value is the number of awards won by the director. *Jussi* and *Bodil* have been awarded for over thirty years, thus the directors in the movies of the sample have practically all started their careers when the award was already issued. However, the Norwegian Amanda was first awarded in 1985, and some movie practitioners may have been active before that year.

Actor. This variable tries to capture the star power in the movie the same way as the *Director* variable. If the actor or actress has won the *Jussi, Amanda* or *Bodil* awards before making the movie, the movie will get a value according to the number of the awards won. Three actors or actresses mentioned first in the movie credits are considered. Both the leading role and the supporting role awards are valued the same way. The awards of each of the actors in the movie are summed together.

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[2] Until 2004 award for best film was given to director, 2005 onwards it was given to the producer but a new category of best director was awarded.

Release periods. Some previous studies (Litman and Ahn 1998) have divided the movies into four categories according to the demand seasons in United States. Because the Nordic market is known to be different, adopting the same method would not be practical. Instead the study divides the sample into four categories according to their time of release: Winter (December to February), Spring, Summer and Fall. Each release period is three months long.

Genre. The movies are categorized into eight groups according to their genre. The groups are *Action*, *Comedy*, *Drama*, *Romantic comedy*, *Family*, *Animation*, *Thriller* and *Documentary*. Animated films are not grouped with family films because of their special role in Nordic movie production. They are considered to have better opportunity at reaching international markets because of their lower language barrier. This study uses the genre codes of IMDb. The databases of national film supporter are used as secondary sources and for confirmation.

Age rating. The movie age ratings in Finland, Norway and Denmark are inspected and classified by the organizations in the country. In Finland such role is given to the Finnish Board of Film Classification (Valtion elokuvatarkastamo VET). However the films are classified into same five different classes in all three countries: 3 for all ages, 7 for persons over seven years, 11[3], 15 and 18[4] respectively. They are legally binding, though 2 years younger may attend if accompanied by an adult in categories 7, 11 and 15. In the model if the movie is rated for persons over 7, the dummy variable 7 gets a value of 1 and zero otherwise.

Sequel. Sequel variable is given the value 1 if the movie is sequel or a prequel to an existing movie. Most of these movies are part of a longer series, although the longest series seem to have all but disappeared in the past few years. Sometimes it was easy to know if the movie is a sequel, for instance the movie might have a clear number in the title. On other occasions it required a little bit more work, fortunately the IMDb database was again of great assistance.

[3] In 2007 new class was introduced: 13. Only one movie in the sample belongs to the class, which was then grouped with class 11.
[4] The sample includes only one film that is for persons over 18 (grouped with class 15)

Box office bonus. This variable is only applicable to Norwegian movies. In Norway a substantial part of the total support given to a movie production is rewarded only after the movie's release. The bonus is based on how well the film succeeds in theaters, making it naturally highly correlated with the box office revenue.

6.2.2 Data biases

The data should not be very biased in depicting the Finnish, Norwegian and the Danish movie market. Biases are mainly due to the overall structure of the market. The sample does not represent the whole European or other markets on a meaningful level. However for other Scandinavian countries that have similar market structure to the countries included in the study, the generalization of results could be possible.

The motion pictures that had to be rejected because of unavailable data may cause a minor selection bias to the study. Those movies were mostly very small releases that had very few viewings in total.

The most important bias occurs because the revenue figure in the data only includes the ticket sales portion of the total revenue. Unfortunately DVD sales and rentals and other additional income could not be included in the study because such data is not available for research. Those revenue streams continue for many years and thus adding bias towards older movies.

Table 3

Descriptive statistics

This table presents the descriptive statistics for 394 films. In addition to the full sample statistics, the sample is divided by the production country. The variables *Domestic box office, international box office, Production support, Marketing support, Box office bonus, Marketing cost* and *Production cost* are valued in euros, current prices. Variables *Co-production, Sequel, Award, Genre, Age rating, Release period* and *Year of release* are dummies.

			All films					By production country													
								Finland					Norway					Denmark				
Variable		exp. sign	N	%	Min	Max	Avg	N	%	Min	Max	Avg	N	%	Min	Max	Avg	N	%	Min	Max	Avg
Total			394	100%				113	100%				177	100%				104	100%			
Domestic box office (€)			394	100%	2 008	5 902 448	878 814	113	100%	2 008	4 891 041	768 650	177	100%	2 878	5 902 448	688 156	104	100%	3 179	4 829 040	1 322 996
International box office (€)			143	36%	28	13 582 938	580 587	34	30%	74	13 197 501	479 867	53	30%	28	7 149 695	527 665	56	54%	156	13 582 938	691 824
Production cost (€)		+	394	100%	63 315	16 826 089	1 982 492	113	100%	63 315	3 789 420	1 259 671	177	100%	121 981	16 826 089	2 193 659	104	100%	95 294	12 777 207	2 408 477
Production support (€)		-	388	98%	3 084	5 482 637	915 859	113	100%	3 084	849 585	530 401	173	98%	41 678	5 482 637	1 171 307	102	98%	77 485	1 735 071	909 625
Marketing cost (€)		+						72	64%	4 521	822 191	170 900										
Marketing support (€)		-						72	64%	4 561	84 831	62 886										
Box office bonus (€)		+											172	97%	1 583	3 609 582	344 100					
Screens		+	215	55%	1	160	36	111	98%	1	75	21						104	100%	4	160	52
Length		-	394	100%	52	180	93	113	100%	52	136	96	177	100%	54	180	91	104	100%	73	177	93
Review		+	264	67%	0,17	1,00	0,65	83	73%	0,20	1,00	0,70	84	47%	0,33	1,00	0,69	97	93%	0,17	1,00	0,57
IMDb rating		+	378	96%	1,0	8,8	5,8	110	97%	2,3	7,8	6,1	165	93%	1,0	8,8	5,7	103	99%	2,2	8,3	5,9
Director		+	71	18%	0	5		26	23%	0	4		24	14%	0	2		21	20%	0	5	
Actor		+	136	35%	0	7		51	45%	0	5		35	20%	0	4		50	48%	0	7	
Co-production		+	77	20%				18	16%				30	17%				29	28%			
Sequel		+	23	6%				6	5%				8	5%				9	9%			
Award		+	26	7%				9	8%				13	7%				4	4%			
Genre	Action	-	3	1%				2	2%				1	1%				0	0%			
	Drama	+/-	159	40%				60	53%				59	33%				40	38%			
	Thriller	+/-	30	8%				9	8%				15	8%				6	6%			
	Comedy	+	73	19%				15	13%				32	18%				26	25%			
	Romantic comedy	+/-	17	4%				3	3%				10	6%				4	4%			
	Family	+/-	54	14%				10	9%				20	11%				24	23%			
	Animation	+/-	12	3%				3	3%				5	3%				4	4%			
	Documentary	-	46	12%				11	10%				35	20%				0	0%			
Age rating	3	+	123	31%				35	31%				52	29%				36	35%			
	7	+	67	17%				16	14%				31	18%				20	19%			
	11	+/-	120	30%				39	35%				45	25%				36	35%			
	13	-	1	0%				1	1%				0	0%				0	0%			
	15	-	82	21%				22	19%				48	27%				12	12%			
	18	-	1	0%				0	0%				1	1%				0	0%			
Release period	Winter	+	138	35%				49	43%				60	34%				29	28%			
	Spring	+/-	67	17%				17	15%				30	17%				20	19%			
	Summer	-	189	48%				47	42%				87	49%				55	53%			
	Fall	+/-	119	30%				35	31%				52	29%				32	31%			

Table 4

Pearson correlation matrix

This table presents the correlations between the variables in the study. * and ** mark the significances of 5% and 1% respectively.

	Dom. bo	Int. bo	Prod. cost	Prod. Sup.	Mark. cost	Mark. sup.	Bo bonus	Screens	Length	Review	IMDb rating	Director	Actor	Co-prod.	Sequel	Award
Dom. box office	1,000															
Int. box office	,200*	1,000														
Production cost	,267**	,371**	1,000													
Production support	,214**	,121	,667**	1,000												
Marketing cost	,460**	-,131	,331**	,418**	1,000											
Marketing support	,526**	,114	,596**	,699**	,540**	1,000										
Box office bonus	,715**	,208	,539**	,415**			1,000									
Screens	,695**	-,028	,259**	,416**	,671**	,679**		1,000								
Length	,216**	,281**	,434**	,271**	,358**	,572**	,160*	,004	1,000							
Review	-,015	,251*	-,002	,029	-,180	,013	-,189	-,269**	,092	1,000						
IMDb rating	,124*	,311**	,077	-,011	-,147	-,220	-,080	-,112	,151**	,487**	1,000					
Director	,060	,380**	,182**	,051	-,081	,124	-,045	-,010	,170**	,131*	,182**	1,000				
Actor	,177**	,272**	,179**	,069	,076	,289*	,009	,117	,143**	,063	,105*	,164**	1,000			
Co-production	-,010	,208*	,351**	,131**	-,019	-,040	,028	-,059	,189**	,077	,205**	,153**	,020	1,000		
Sequel	,274**	-,059	,002	-,041	-,057	-,085	,250**	,267**	-,058	-,140*	-,192**	-,049	-,045	-,095	1,000	
Award	,131**	,318**	,073	,088	-,039	,059	,053	-,067	,163**	,272**	,254**	,164**	,030	,127*	-,066	1,000

6.3 Methodology

This section describes the statistical methods of the thesis. For this study to be able to determine how much an individual determinant has weight in the overall success of the movie, an econometrical model must be created. A log-linear regression model is an easily applicable technique that provides certain weights to each of the variables, thus creating a line that forecasts the dependent variable given the needed determinants.

In essence the model used in this research is a log-linear regression on the individual movies. Similar model has been tested and used by previous researchers including Smith et al (1986), Prag et al (1994), Litman et al (1998), Ravid (1999).

(1) $dependent_i = ß_0 + ß_1\ independent_i + \ldots + ß_n\ independent_i + \varepsilon_i$

Where:

β's are the coefficients
i indexes the individual movies.
ε is the normally distributed error term.

Dependent variables:	Independent variables:	
Ln Total box office	Ln Production cost	And dummies for:
Ln Domestic box office	Ln Production support	Production country
Ln International box office	Ln Marketing cost	Genre
Rate of return	Screens	Age rating
Absolute return	Length	Release period
IMDb rating	Review	Year of release
Award	IMDb rating	
	Director	
	Actor	
	Co-Production	
	Award	
	Sequel	

Regressions are estimated with different combinations of dependent and independent variables. The variables were defined in detail in the previous section.

A few previous papers (see De Vany's work, Bagella and Bechetti, 1999) have argued that due to the movie return distribution being heavily skewed, and thus violating the normality assumption needed for the OLS regression, more advanced statistical methods would improve the robustness of the results. Even as I understand their argument, the decision to go with somewhat simpler model has several advantages and reasons: 1) Comparison to previous papers is possible, similar methodology is used in a wide array of studies. 2) Implementation is more straightforward and finding the correct distribution curve for the local market would be very difficult. 3) With the smaller domestic markets the upside of the returns is more limited than in United States where the majority of studies have focused, hence the fitness of the model is improved.

6.4 Expert interviews

The expert interviews are to complement the statistical data set and to provide some background information on the industry. The interviews are also one of the main sources of information for the chapter 3. I interviewed people who are experts in the field of movie production in Finland. The interviewees were chosen because of their inside knowledge and active role in the current Finnish movie market. The interviews were conducted in person in Helsinki during the fall 2007. Table 5 lists the interviewed people.

Table 5

List of interviewed experts

The table lists the names, titles, and organizations of the experts interviewed for the thesis. Erkki Astala was Head of Production at the Finnish Film Foundation before working for YLE. Petri Kemppinen was Production Consultant at the Finnish Film Foundation at the time of the interview and started at his current position on January 1st 2008. Hanna Hemilä and Tero Kaukomaa are producers and entrepreneurs at their respective companies.

Name	Title	Organization
Mr. Erkki Astala	Head of Co-productions	YLE Finnish Broadcasting Company
Ms. Hanna Hemilä	Producer	Lumifilm
Mr. Tero Kaukomaa	Producer	Blind Spot Pictures
Mr. Petri Kemppinen	Head of International Affairs and Development	Finnish Film Foundation

The interviews were unstructured and the experts were allowed to express their opinions quite freely without intervention. The questions were mostly open-ended. The main purpose of the interviews is to investigate the reasons behind the production and the financing decisions leading to the current portfolio of movies produced in Finland. Secondary reasons for the interviews include but are not limited to gaining background information on Finnish motion picture financing and production in general and to discuss about the key factors that determine the future of movie making in Finland.

The interviews lasted between 30 to 45 minutes. The topics discussed were as follows:

- Motion picture finance in Finland. Who provides it and how easy it is to obtain. The different organizations behind it. Other ways to fund a production.
- Production selection. What kinds of qualities are looked upon while deciding whether to produce the movie or not. If estimated, how is the movie's economic value assessed before the start of the production.
- International distribution. The ways of international distribution of Finnish movies to other markets. How to increase it?
- Different sources of income in addition to the domestic box-office.
- Future of Finnish motion picture production. Where is the industry going, and what is the role of public support in the near future?

Interviewees were allowed to talk about these issues broadly and their point of expertise is clearly seen in their answers. For that reason the comparability between the answers is to some extent reduced. However it allowed the interviewees to provide information that would have been very difficult to obtain from secondary sources or with

more structured interview. The follow-up questions were used to focus more on specific issues that had arisen, or to verify that I had understood the answers.

I agreed not to connect any of the answers to the names of the interviewees, nor to use any direct quotes unless given specific permission. The interviews were conducted in Finnish. The small number of interviewees and their similar background either as a producer or an employee of a company related to the Finnish government introduces a bias to the results of the interviews. Due to the nature of the interviews as a complementary source of information to the thesis and its results, the bias should not be considered to have any serious implications.

7 Empirical results and analysis

In this chapter I will present and interpret the results of the statistical analyses. The chapter is structured to roughly follow the composition of chapter 5 and each hypothesis group is discussed independently in their section. The chapter will conclude by presenting the discussion that took place in expert interviews.

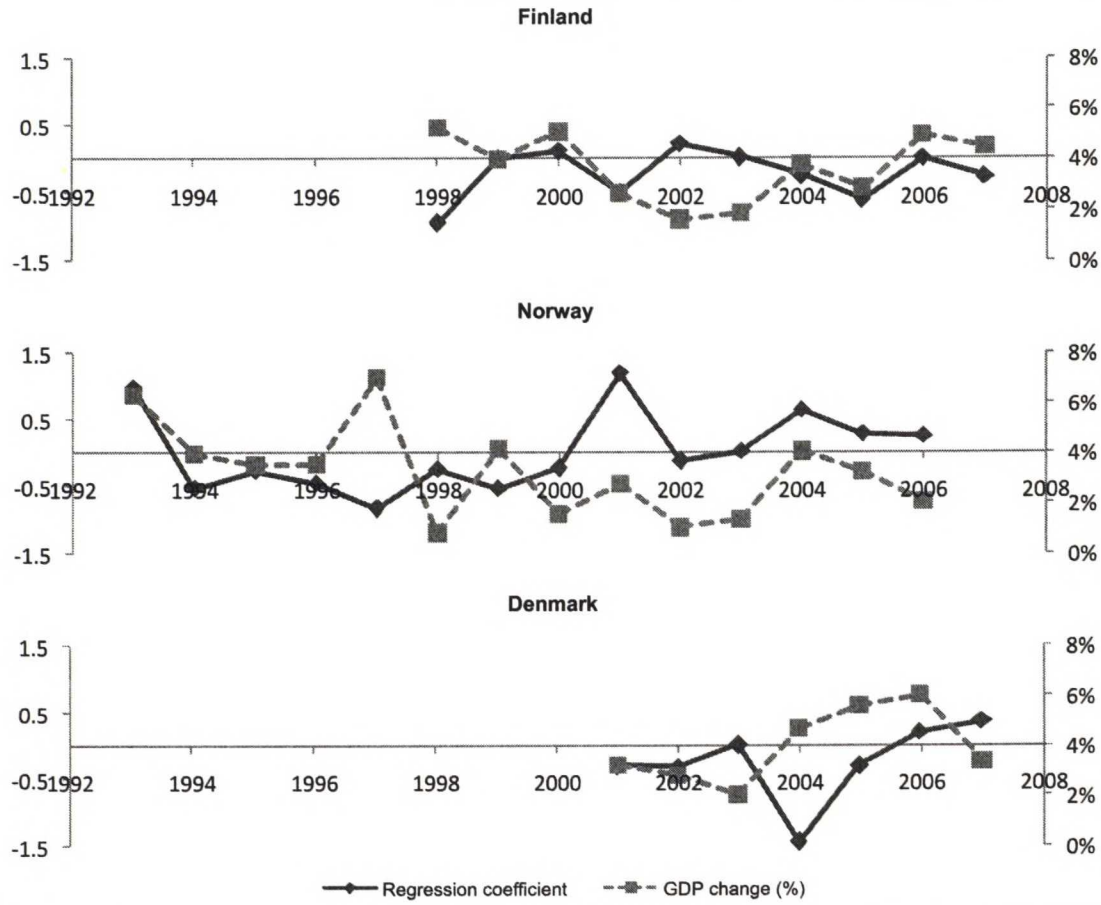
The regression results are presented in the tables from 6 to 10 found on the following pages. The different regression models and specifications are constructed so that the movie's success can be analyzed from various angles. The majority of the regression models test how the box office revenue stream is affected by the different variables. The movie industry and the media puts high emphasis on box office admissions when assessing the movies successfulness, but admissions revenue is hardly the full story. To gain information on the profitability of the production, the share of the box office revenue to the production cost as well as their difference are tested as dependent variables. Finally, for some stakeholders the artistic quality of the movie is the most important part when claiming it successful. The *IMDb rating* and the *Award* variables are thus also tested on the left hand side of the regression equation.

The sample consists of movies released between 1993 and 2007. To control the influence of general economic condition of the country, a year of release dummy is included in the regression models. The figure 7 shows the year of release regression coefficients in Ln Domestic box office regression and compares them to gross domestic product change in the individual countries. Both lines follow roughly the same pattern, thus justifying the use of the release year variables. The year coefficients are not presented in the regression tables. However, the situation in the economy appears to be an influential predictor of the film's box office performance.

Figure 7

Release year coefficients and GDP

This figure presents the release year coefficients of Ln Domestic box office regression and the volume change (%) of gross domestic product (GDP) in the three countries of the thesis. The solid line marks regression coefficients (2003 is the default year), GDP is marked by the grey dashed line. GDP scale is on the right.



Source: Statistics Finland, Statistics Norway and Statistics Denmark

7.1 Production size and the source of finance

Production budget is a contributing factor to the film's box office performance; the result is significant on virtually every model done with the full sample. It is not a surprise as it has been found on practically every paper done on the topic. Thus the Nordic motion picture market appears to follow the same set of rules as the bigger markets.

Table 6

Total box office regression

The table presents the regression coefficients and significances on LN Total box office with six different specifications (Tbo-1 to Tbo-6). *, ** and *** mark the significance of 10%, 5% and 1% respectively. The dummy variables *Norway*, *Drama*, *3* and *Winter* are the defaults.

Independent variable		exp. sign	Dependent variable: Ln Total box office											
			Tbo-1		Tbo-2		Tbo-3		Tbo-4		Tbo-5		Tbo-6	
Intercept			-2,997		-2,574		-4,099		7,256		-2,412		-2,773	
			(0,077)		(0,139)		(0,020)		(0,000)		(0,135)		(0,211)	
Ln Production cost		+	0,971	***	,936	***	1,178	***			0,939	***	1,035	***
			(0,000)		(0,000)		(0,000)				(0,000)		(0,000)	
Ln Production support		-					-0,020		0,160	***				
							(0,647)		(0,000)					
Length		-	0,018	***	0,017	***			0,034	***				
			(0,003)		(0,003)				(0,000)					
Review		+											1,012	**
													(0,043)	
IMDb rating		+									0,264	***		
											(0,000)			
Director		+			0,184	*								
					(0,069)									
Actor		+			0,184	***					0,169	***		
					(0,004)						(0,006)			
Co-production		+			-0,207		-0,320	*	0,108					
					(0,270)		(0,087)		(0,574)					
Sequel		+			0,830	***	0,755	***	0,870	***	1,131	***	1,028	***
					(0,005)		(0,010)		(0,006)		(0,000)		(0,002)	
Award		+					1,378	***			0,932	***	1,232	***
							(0,000)				(0,001)		(0,000)	
Production country	Finland	+/-	0,179		0,053		0,346	*	-0,402	**	0,109		0,504	**
			(0,382)		(0,795)		(0,075)		(0,037)		(0,570)		(0,045)	
	Norway	+/-												
	Denmark	+/-	0,338	*	0,174		0,473	**	0,281		0,272		0,627	***
			(0,096)		(0,402)		(0,018)		(0,189)		(0,167)		(0,004)	
Genre	Action	+/-	0,976		1,051		1,157		1,285		1,058		0,862	
			(0,217)		(0,174)		(0,133)		(0,120)		(0,152)		(0,235)	
	Drama	+/-												
	Thriller	+/-	0,114		0,087		0,125		0,306		0,060		-0,080	
			(0,698)		(0,761)		(0,660)		(0,317)		(0,828)		(0,802)	
	Comedy	+	0,703	***	0,644	***	0,604	***	0,732	***	0,563	***	0,564	**
			(0,001)		(0,001)		(0,002)		(0,001)		(0,003)		(0,012)	
	Romantic comedy	+/-	0,846	**	0,979	***	0,743	**	0,957	**	0,899	***	0,585	
			(0,019)		(0,006)		(0,033)		(0,011)		(0,008)		(0,124)	
	Family	+	1,083	***	1,104	***	0,864	***	1,272	***	0,966	***	0,650	**
			(0,000)		(0,000)		(0,000)		(0,000)		(0,000)		(0,012)	
	Animation	+/-	0,768	*	0,818	*	0,333		1,397	***	0,439		-0,139	
			(0,088)		(0,064)		(0,418)		(0,003)		(0,290)		(0,779)	
	Documentary	-	-0,191		-0,107		-0,110		-0,891	***	-0,280		-0,111	
			(0,515)		(0,712)		(0,703)		(0,002)		(0,341)		(0,787)	
Age rating	3	+												
	7	+	0,115		0,114		0,182		0,232		0,061		-0,031	
			(0,587)		(0,587)		(0,379)		(0,299)		(0,763)		(0,894)	
	11	+/-	0,017		0,089		0,158		0,185		0,052		-0,135	
			(0,934)		(0,653)		(0,420)		(0,381)		(0,786)		(0,545)	
	15	-	0,219		0,276		0,299		0,192		0,201		0,090	
			(0,357)		(0,237)		(0,195)		(0,441)		(0,379)		(0,740)	
Release period	Winter	+												
	Spring	+/-					-0,338	*			-0,502	**	-0,147	
							(0,088)				(0,012)		(0,544)	
	Summer	-					0,050				-0,016		-0,002	
							(0,802)				(0,935)		(0,992)	
	Fall	+/-					-0,154				-0,209		0,005	
							(0,359)				(0,205)		(0,979)	
Year dummies			yes		yes		yes		yes		yes		yes	
Number of observations			394		394		394		394		378		264	
Adjusted R square			0,415		0,442		0,451		0,361		0,446		0,360	

However, in Denmark the production size is only significant on 10% level (Den-1). The Danish filmgoers appear to be less inclined to the lure of high production values. As the

home of the dogme movies[5], it might not be such a huge surprise, but a small revelation regardless. Adding to the confusion, on *Rate of return* regression (Ror-3) and on *Absolute return* regression (Abs-1) the production cost coefficient is even negative. The argument that budget creates revenue, not necessarily profits appears plausible, and this study adds to its validity. Regardless, more money in the production does seem to do some good to the end product; the IMDb rating improves as the budget increases.

The effect of government subsidy to the movie performance is tested with the *Production support* variable and the results are somewhat mixed. On tests done with the full sample the amount of support is positively related to the box office performance, although the role of the production budget is bigger. The support does not seem to matter in international releases. The national supporters are more interested in the local performance. One of the prime reasons for the public support is, according to Bagella and Bechetti (1999), to promote the national cultural heritage. Which promotes it better: more local people seeing the film, or a larger international audience?

Looking more closely to the individual countries reveals interesting results. In Finland the production support yield significant positive results at 1% level (Fin-2), followed with similar results at 10% level in Denmark (Den-2). Norway gets to be different, no significant results. The bulk of the explanation lies with the Norwegian method of awarding good box office performance with separate box office bonus: the basic support does not even try to gauge the future box office successes. Even so, it appears that Norway's extensive support for movie production has not resulted in a large-scale flow of global box office hits as has to some extent happened in Denmark.

Overall the public support seems to go to the movies that gather a lot of interest at the box offices. However the significant negative coefficient in the *Absolute return* regression supports my original hypothesis, which stated that the public supporters do not necessarily pick movies that are financially successful. Instead they do have a tendency to grant more support to movies that will eventually have high IMDb scores (IMDb-2).

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[5] Filmmaking style of strict rules. For example use of special effects is forbidden.

International co-productions, the motion pictures that have received (public) funds from more than one country, are another subject of interest in this thesis. The results are mixed but rather easily explained. In domestic markets co-productions do worse than other movies, however internationally they do better in the box offices than the rest. It is understandable that movies with good chances of worldwide financial success gain the attention of international financiers. Those are often not the same movies that do well back home.

7.2 Motion picture objective features

Movie genre is found to have an impact on film's performance on previous literature. The results seem to confirm the earlier findings: both romantic and regular comedies have significant positive coefficients in most models. Family movies provide similar results, and as a sign of genre's profitability the result is significant also in the rate of return regression. Thus, genre seems to be a significant predictor of the movie's performance.

Animations are also positive and significant in some specifications. Worth noting is that they do exceptionally well internationally (Ibo-2). The result is interesting but somewhat expected; animations have practically none of the internationalization problems of acted films because the voice acting can be localized to the region's language. The same is true to a lesser extent for family movies, which are often localized, but the tests don't support their international success.

Documentaries do as badly in the theaters as was hypothesized. Their proportion of income from theatrical releases is smaller than that of other movies, thus the result should not be interpreted too far.

The tests are unable to find much significance from age ratings. It does not seem that the lower rated movies are doing financially any better than the rest, the signs are even opposite on some specifications. In North America high age rating has been found to have a significant negative effect on the film's performance (Ravid and Basuroy, 2004). One can theorize that the difference has to do with the discrepancies of the markets; in North Europe age ratings are generally lower due to different attitude towards nudity and language. In

Table 7

Domestic and International box office regression

The table presents the OLS regression coefficients and significances on Ln Domestic box office and Ln International box office both with three specifications. *, ** and *** mark the significance of 10%, 5% and 1% respectively. The dummy variables *Norway*, *Drama*, *3* and *Winter* are the defaults.

			Dependent variable:									
		exp.	Ln Dom. box office				Ln Int. box office					
Independent variable		sign	Dbo-1		Dbo-2		Dbo-3		Ibo-1		Ibo-2		Ibo-3	
Intercept			-2,528		7,699		-2,214		-13,787		-2,611		-16,739	
			(0,140)		(0,000)		(0,371)		(0,020)		(0,292)		(0,006)	
Ln Production cost		+	0,949	***			0,966	***	1,049	**			0,768	*
			(0,000)				(0,000)		(0,019)				(0,092)	
Ln Production support		-			0,149	***					0,177			
					(0,000)						(0,173)			
Length		-	0,013	**	0,028	***	0,004		0,023		0,039	**	0,034	*
			(0,026)		(0,000)		(0,618)		(0,240)		(0,031)		(0,085)	
Review		+					0,994	*						
							(0,056)							
IMDb rating		+											1,145	***
													(0,000)	
Director		+	0,026		0,090		0,021		0,450		0,519		0,466	
			(0,797)		(0,394)		(0,843)		(0,197)		(0,137)		(0,176)	
Actor		+	0,133	**	0,166	**	0,101		0,164		0,200		0,112	
			(0,036)		(0,013)		(0,146)		(0,452)		(0,362)		(0,607)	
Co-production		+	-0,538	***	-0,219		-0,465	**	4,031	***	4,379	***	3,792	***
			(0,004)		(0,247)		(0,030)		(0,000)		(0,000)		(0,000)	
Sequel		+	0,820	***	0,947	***	1,024	***	0,637		0,775		1,432	
			(0,005)		(0,002)		(0,003)		(0,525)		(0,441)		(0,169)	
Award		+	1,081	***	0,989	***			2,982	***	2,876	***		
			(0,000)		(0,001)				(0,002)		(0,003)			
Production country	Finland	+/-	0,175		-0,417	**	0,451		-0,465		-1,109	*	-0,970	
			(0,386)		(0,028)		(0,110)		(0,505)		(0,076)		(0,171)	
	Norway	+/-												
	Denmark	+/-	0,192		0,063		0,364		2,202	***	2,067	***	2,119	***
			(0,351)		(0,768)		(0,133)		(0,002)		(0,004)		(0,003)	
Genre	Action	+/-	1,316	*	1,571	**	0,947		3,212		3,491		2,877	
			(0,085)		(0,050)		(0,215)		(0,223)		(0,187)		(0,271)	
	Drama	+/-												
	Thriller	+/-	0,169		0,361		-0,075		0,252		0,458		0,263	
			(0,552)		(0,224)		(0,826)		(0,797)		(0,640)		(0,791)	
	Comedy	+	0,732	***	0,811	***	0,616	**	-0,418		-0,332		-0,361	
			(0,000)		(0,000)		(0,011)		(0,540)		(0,628)		(0,599)	
	Romantic comedy	+/-	1,015	***	1,116	***	0,786	*	-1,274		-1,158		-0,789	
			(0,004)		(0,002)		(0,053)		(0,289)		(0,338)		(0,511)	
	Family	+	1,187	***	1,482	***	0,820	***	0,149		0,474		0,372	
			(0,000)		(0,000)		(0,005)		(0,863)		(0,578)		(0,668)	
	Animation	+/-	0,399		1,009	**	-0,163		4,110	***	4,777	***	4,709	***
			(0,359)		(0,025)		(0,771)		(0,007)		(0,001)		(0,003)	
	Documentary	-	-0,003		-0,709	**	-0,060		-0,630		-1,401		-1,138	
			(0,991)		(0,011)		(0,891)		(0,521)		(0,126)		(0,278)	
Age rating	3	+												
	7	+	0,141		0,178		-0,115		0,102		0,136		-0,057	
			(0,493)		(0,413)		(0,638)		(0,886)		(0,849)		(0,936)	
	11	+/-	0,156		0,253		-0,036		-0,214		-0,105		-0,495	
			(0,423)		(0,216)		(0,880)		(0,750)		(0,876)		(0,469)	
	15	-	0,247		0,174		0,133		0,685		0,606		0,354	
			(0,283)		(0,472)		(0,646)		(0,388)		(0,447)		(0,664)	
Release period	Winter	+												
	Spring	+/-	-0,319		-0,319		-0,149		0,401		0,398		-0,291	
			(0,106)		(0,124)		(0,563)		(0,556)		(0,560)		(0,678)	
	Summer	-	0,143		0,075		0,072		-2,009	***	-2,090	***	-2,276	***
			(0,467)		(0,718)		(0,761)		(0,003)		(0,003)		(0,001)	
	Fall	+/-	-0,084		-0,066		0,041		-0,782		-0,764		-1,146	*
			(0,612)		(0,706)		(0,839)		(0,175)		(0,187)		(0,051)	
Year dummies			yes		yes		yes		yes		yes		yes	
Number of observations			394		394		264		394		394		378	
Adjusted R square			0,437		0,376		0,277		0,347		0,340		0,367	

Table 8

Rate of return and Absolute return regression

The table presents the OLS regression coefficients and significances on Rate of return and Absolute return both with three specifications. *, ** and *** mark the significance of 10%, 5% and 1% respectively. The dummy variables *Norway*, *Drama*, *3* and *Winter* are the defaults.

			Dependent variable:											
		exp.	Rate of return						Absolute return					
Independent variable		sign	Ror-1		Ror-2		Ror-3		Abs-1		Abs-2		Abs-3	
Intercept			1,462		0,182		1,317		14,617		1,511		14,093	
			(0,177)		(0,687)		(0,258)		(0,000)		(0,101)		(0,000)	
Ln Production cost		+	-0,116				-0,179	**	-1,143	***			-1,266	***
			(0,155)				(0,041)		(0,000)				(0,000)	
Ln Production support		-			-0,015						-0,109	**		
					(0,522)						(0,024)			
Length		-	0,005		0,004		0,008	**	0,003		-0,016	**	0,007	
			(0,135)		(0,285)		(0,041)		(0,655)		(0,018)		(0,318)	
Review		+												
IMDb rating		+					0,171	***					0,377	***
							(0,000)						(0,000)	
Director		+	0,126	**	0,118	*	0,157	**	0,205	*	0,119		0,249	**
			(0,049)		(0,065)		(0,018)		(0,094)		(0,359)		(0,046)	
Actor		+	0,115	***	0,111	***	0,107	**	0,120		0,076		0,106	
			(0,004)		(0,006)		(0,011)		(0,117)		(0,349)		(0,180)	
Co-production		+	0,033		-0,007		0,043		-0,330		-0,739	***	-0,327	
			(0,781)		(0,949)		(0,727)		(0,142)		(0,001)		(0,160)	
Sequel		+	0,525	***	0,509	***	0,669	***	1,116	***	0,949	**	1,456	***
			(0,004)		(0,006)		(0,001)		(0,002)		(0,011)		(0,000)	
Award		+	0,992	***	1,003	***			1,749	***	1,836	***		
			(0,000)		(0,000)				(0,000)		(0,000)			
Production country	Finland	+/-	0,009		0,083		-0,067		0,197		0,968	***	0,075	
			(0,946)		(0,464)		(0,624)		(0,421)		(0,000)		(0,770)	
	Norway	+/-												
	Denmark	+/-	0,044		0,061		0,013		0,403		0,600	**	0,357	
			(0,736)		(0,636)		(0,922)		(0,105)		(0,023)		(0,163)	
Genre	Action	+/-	0,679		0,647		0,573		1,182		0,860		1,013	
			(0,158)		(0,179)		(0,253)		(0,201)		(0,381)		(0,285)	
	Drama	+/-												
	Thriller	+/-	-0,014		-0,039		-0,037		0,142		-0,132		0,126	
			(0,937)		(0,825)		(0,847)		(0,679)		(0,716)		(0,726)	
	Comedy	+	0,200		0,190		0,191		0,607	**	0,500	**	0,609	**
			(0,109)		(0,128)		(0,147)		(0,011)		(0,049)		(0,015)	
	Romantic comedy	+/-	0,183		0,172		0,286		0,324		0,227		0,541	
			(0,404)		(0,435)		(0,215)		(0,441)		(0,613)		(0,214)	
	Family	+	0,285	*	0,248		0,299	*	0,542	*	0,177		0,596	*
			(0,071)		(0,111)		(0,073)		(0,073)		(0,577)		(0,059)	
	Animation	+/-	0,007		-0,069		0,192		-0,102		-0,880		0,261	
			(0,980)		(0,797)		(0,524)		(0,846)		(0,109)		(0,645)	
	Documentary	-	-0,067		0,021		-0,157		-0,253		0,647	*	-0,471	
			(0,709)		(0,899)		(0,436)		(0,462)		(0,058)		(0,215)	
Age rating	3	+												
	7	+	0,066		0,060		0,011		0,210		0,127		0,116	
			(0,612)		(0,647)		(0,935)		(0,399)		(0,633)		(0,654)	
	11	+/-	-0,014		-0,026		-0,088		-0,057		-0,168		-0,211	
			(0,907)		(0,833)		(0,501)		(0,808)		(0,503)		(0,394)	
	15	-	0,012		0,021		-0,052		-0,176		-0,081		-0,314	
			(0,936)		(0,885)		(0,741)		(0,526)		(0,783)		(0,288)	
Release period	Winter	+												
	Spring	+/-	0,019		0,019		-0,110		0,007		-0,003		-0,234	
			(0,877)		(0,880)		(0,415)		(0,976)		(0,992)		(0,358)	
	Summer	-	-0,069		-0,062		-0,131		-0,061		-0,011		-0,130	
			(0,581)		(0,621)		(0,323)		(0,799)		(0,967)		(0,603)	
	Fall	+/-	-0,115		-0,117		-0,174		-0,141		-0,174		-0,236	
			(0,276)		(0,266)		(0,123)		(0,486)		(0,419)		(0,266)	
Year dummies			yes		yes		yes		yes		yes		yes	
Number of observations			394		394		378		394		394		378	
Adjusted R square			0,141		0,137		0,092		0,278		0,180		0,260	

Table 9

Total box office regression by production country

The table presents the regression coefficients and significances on LN Total box office for three countries, each with two or three specifications. *, ** and *** mark the significance of 10%, 5% and 1% respectively. The dummy variables *Drama*, *3* and *Winter* are the defaults.

			Dependent variable: Ln Total box office											
		exp.	Finland			Norway			Denmark	
Independent variable		sign	Fin-1	Fin-2	Fin-3	No-1	No-2	Den-1	Den-2
Intercept			-8,352	-0,831	-18,100	-0,860	6,851	4,121	6,920
			(0,014)	(0,761)	(0,000)	(0,715)	(0,000)	(0,343)	(0,000)
Ln Production cost		+	1,379 ***		0,304	0,786 ***		0,609 *	
			(0,000)		(0,379)	(0,000)		(0,057)	
Ln Production support		-		0,616 ***			0,050		0,128 *
				(0,002)			(0,303)		(0,053)
Ln Marketing cost		+			1,922 ***				
					(0,000)				
Length		-	0,012	0,028 **		0,014 *	0,027 ***	-0,002	0,013
			(0,303)	(0,027)		(0,082)	(0,000)	(0,910)	(0,327)
IMDb rating		+		0,377 **	0,550 ***		0,336 ***		0,624 ***
				(0,012)	(0,004)		(0,001)		(0,000)
Director		+	0,332 *	0,371 **	0,342 *	0,019	0,089	0,028	0,014
			(0,064)	(0,047)	(0,069)	(0,945)	(0,750)	(0,868)	(0,924)
Actor		+	0,184	0,243	0,211	0,175	0,168	0,180 *	0,092
			(0,195)	(0,109)	(0,226)	(0,225)	(0,262)	(0,059)	(0,299)
Co-production		+	-0,758 **	-0,401	-0,221	0,055	0,271	0,422	0,043
			(0,049)	(0,317)	(0,638)	(0,855)	(0,368)	(0,282)	(0,903)
Sequel		+	1,277 **	1,901 **	2,837 **	1,185 **	1,715 ***	0,574	0,740
			(0,044)	(0,012)	(0,016)	(0,012)	(0,001)	(0,268)	(0,122)
Award		+	0,757			1,294 ***		2,087 ***	
			(0,132)			(0,001)		(0,008)	
Genre	Action	+/-	0,650	1,078	1,496	1,070	0,834		
			(0,507)	(0,297)	(0,246)	(0,397)	(0,517)		
	Drama	+/-							
	Thriller	+/-	-0,516	-0,075	-0,513	0,516	0,212	0,078	0,333
			(0,334)	(0,895)	(0,347)	(0,212)	(0,630)	(0,901)	(0,558)
	Comedy	+	0,269	0,058	-0,022	0,862 ***	0,704 **	1,046 ***	1,300 ***
			(0,515)	(0,896)	(0,960)	(0,004)	(0,027)	(0,008)	(0,000)
	Romantic comedy	+/-	0,937	0,688	-1,495	0,980 **	1,090 **	0,760	0,957
			(0,279)	(0,457)	(0,247)	(0,032)	(0,024)	(0,366)	(0,213)
	Family	+	0,867 *	0,949 *	0,837	1,453 ***	1,746 ***	1,343 ***	1,462 ***
			(0,083)	(0,072)	(0,127)	(0,000)	(0,000)	(0,005)	(0,001)
	Animation	+/-	0,371	0,941	2,732 **	1,550 **	2,736 ***	0,343	0,298
			(0,676)	(0,394)	(0,039)	(0,018)	(0,000)	(0,681)	(0,693)
	Documentary	-	-0,768	-1,160 *	0,307	0,482	-0,227		
			(0,185)	(0,081)	(0,643)	(0,194)	(0,556)		
Age rating	3	+							
	7	+	0,335	0,356	-0,224	0,295	0,069	-0,184	-0,365
			(0,473)	(0,487)	(0,676)	(0,316)	(0,819)	(0,647)	(0,324)
	11	+/-	0,284	0,335	-0,314	0,067	-0,061	-0,159	-0,301
			(0,403)	(0,364)	(0,412)	(0,834)	(0,860)	(0,707)	(0,438)
	15	-	0,561	0,428	-0,751	0,343	0,278	-0,005	-0,421
			(0,193)	(0,352)	(0,194)	(0,291)	(0,424)	(0,993)	(0,434)
Release period	Winter	+							
	Spring	+/-	-0,686 *	-0,816	-0,418	0,093	-0,226	0,037	-0,432
			(0,099)	(0,066)	(0,351)	(0,746)	(0,483)	(0,932)	(0,288)
	Summer	-	0,579	0,297	0,560	0,385	0,173	-0,247	-0,179
			(0,216)	(0,540)	(0,304)	(0,171)	(0,563)	(0,531)	(0,616)
	Fall	+/-	-0,007	-0,247	-0,091	-0,081	-0,228	0,242	0,024
			(0,982)	(0,472)	(0,810)	(0,744)	(0,386)	(0,523)	(0,946)
Year dummies			yes	yes	yes	yes	yes	yes	yes
Number of observations			113	110	70	177	165	104	103
Adjusted R square			0,572	0,482	0,688	0,473	0,368	0,186	0,330

addition, a genre common in Hollywood, violent action movies that are only suitable for older audiences, often require very big production budgets that are unattainable to European producers. Movies restricted for under 15-year-olds do however have higher IMDb ratings. It could be that the movies with a comparatively high age rating have less artistic compromises, thus leading to a higher IMDb score.

A variable that has not gained much attention from previous research, the length of the movie, is significant and positive on many of the tested specifications. I hypothesized that the opposite would be true; longer film requires more resources put into filming and editing of the movie instead of more beneficial activities. The positive result is difficult to explain; although one perhaps incomplete explanation is that the longest movies are regularly so-called spectacles with a tremendous marketing push and great interest from the public. The correlation between the length of the movie and the marketing cost is very high, therefore the explanation appears to have some merit to it.

7.3 Film distribution

The timing of film's release is at least in principle under filmmaker's control. Traditionally the start of the year has been good in theaters in Finland, whereas summers have been slow. The first hypothesis seems to hold, coefficients for other periods are worse than the *winter*. The latter cannot be verified from the results, on some models the result is even positive for summer, albeit insignificant. Currently summer is not a bad period for a movie release. The same cannot be said about the spring (March to May). Financially it is not a good time to release a movie; the significance of negative result is at best at 5% level in the total box office regression. Despite or because of it, spring is also the release period when the movies have higher IMDb ratings.

What is interesting about the summer releases is that they tend to do badly internationally. Remembering that the release period marks the domestic release of the movie, the result is a little bit confusing at first; the original release of the movie should not affect the secondary markets. The most reasonable explanation to the phenomenon might be that the types of movies released in the summer are not interesting to international audiences. Summer releases are often exclusively designed for the local audiences with movies about national heroes and figures. Why summer is so often chosen as release period for such movies is harder to explain, but perhaps on summer holidays a different segment of the audience attends the movie theaters.

The number of opening screens is heavily correlated with the production size and the data is not available for Norwegian movies. Because of these limitations the variable *screens* had to be omitted from the regression tests. It is seen in the high correlation that a film with a wide release has a high box office revenue, although the causality between the number of screens and the admissions is debatable. The movies with big production cost tend to have a wide release.

7.4 The effect of marketing and brand

Four variables measure the effect of the marketing or the brand to the movie's success. The results support their importance; each one of the four variables (Sequel, Director, Actor and Marketing cost) is significant in at least one of the model specifications.

There are 23 sequels in the sample (6%). In the financial models with the full sample, the variable coefficient is positive and significant at the 1% level on several regression models. However, it appears that sequel brands have little value outside their country of origin: the international regression does not provide significant results for the variable. It is understandable; building a global or a European wide movie series requires a tremendous marketing power that is not often available for local production companies and distributors. In individual countries the sequel variable is significant in Finland and in Norway, but not in Denmark. It seems that making a sequel is good for business, but the end product is not often regarded as a quality movie: the sequels have IMDb scores much lower than the rest. On rate of return and absolute return regressions the sequel variable is also significant. Despite the economic evidence in support of making sequels, increasing their production is restricted by the quantity of successful original content.

Earlier studies have found conflicting evidence on importance of stars in movie productions. In North European home markets their role appears to be more closely connected to the financial success of the movie. Both the director and the actor variables provide significant results in revenue and profitability regressions. Again their significance is gone in the international markets. Directors also have a key role when the awards for the best movie are distributed.

Table 10

IMDb rating and Award regression

The table presents the regression coefficients and significances on IMDb rating and Award, both with two specifications. *, ** and *** mark the significance of 10%, 5% and 1% respectively. The dummy variables *Norway*, *Drama*, *3* and *Winter* are the defaults.

			Dependent variable:			
			IMDb rating		Award	
Independent variable		exp. sign	IMDb-1	IMDb-2	Awa-1	Awa-2
Intercept			2,137	4,373	0,061	-0,130
			(0,131)	(0,000)	(0,853)	(0,344)
Ln Production cost		+	0,255 **		-0,010	
			(0,016)		(0,696)	
Ln Production support		-		0,087 ***		0,006
				(0,004)		(0,384)
Length		-	-0,003	0,000	0,002 *	0,002 *
			(0,495)	(0,966)	(0,051)	(0,068)
Review		+				
IMDb rating		+				
Director		+	0,071	0,082	0,051 ***	0,050 ***
			(0,379)	(0,305)	(0,008)	(0,010)
Actor		+	0,056	0,061	0,005	0,004
			(0,271)	(0,228)	(0,684)	(0,735)
Co-production		+	0,224	0,293 **	0,062 *	0,055
			(0,135)	(0,042)	(0,086)	(0,109)
Sequel		+	-0,822 ***	-0,789 ***	-0,032	-0,035
			(0,001)	(0,001)	(0,569)	(0,535)
Award		+	0,995 ***	0,953 ***		
			(0,000)	(0,000)		
Production country	Finland	+/-	0,327 **	0,208	-0,026	-0,013
			(0,048)	(0,156)	(0,512)	(0,709)
	Norway	+/-				
	Denmark	+/-	-0,047	-0,051	-0,056	-0,050
			(0,774)	(0,756)	(0,154)	(0,201)
Genre	Action	+/-	-0,031	0,027	-0,134	-0,138
			(0,959)	(0,964)	(0,364)	(0,348)
	Drama	+/-				
	Thriller	+/-	-0,387 *	-0,365	-0,090 *	-0,097 *
			(0,096)	(0,112)	(0,100)	(0,075)
	Comedy	+	-0,163	-0,150	-0,034	-0,036
			(0,310)	(0,347)	(0,372)	(0,344)
	Romantic comedy	+/-	-0,422	-0,377	0,040	0,042
			(0,132)	(0,177)	(0,548)	(0,531)
	Family	+	-0,364 *	-0,292	-0,053	-0,057
			(0,073)	(0,143)	(0,275)	(0,233)
	Animation	+/-	-0,535	-0,385	0,039	0,028
			(0,143)	(0,277)	(0,641)	(0,732)
	Documentary	-	0,421 *	0,268	-0,045	-0,032
			(0,085)	(0,237)	(0,418)	(0,534)
Age rating	3	+				
	7	+	0,109	0,089	-0,033	-0,038
			(0,516)	(0,595)	(0,403)	(0,341)
	11	+/-	0,226	0,259	-0,036	-0,036
			(0,157)	(0,103)	(0,340)	(0,337)
	15	-	0,402 **	0,388 **	0,005	0,007
			(0,034)	(0,040)	(0,908)	(0,881)
Release period	Winter	+				
	Spring	+/-	0,487 ***	0,476 ***	-0,045	-0,046
			(0,003)	(0,004)	(0,239)	(0,228)
	Summer	-	0,127	0,080	-0,033	-0,036
			(0,432)	(0,620)	(0,388)	(0,351)
	Fall	+/-	0,229 *	0,221	-0,010	-0,011
			(0,094)	(0,104)	(0,761)	(0,728)
Year dummies			yes	yes	yes	yes
Number of observations			378	378	394	394
Adjusted R square			0,213	0,218	0,015	0,016

The most direct variable on the effect of the marketing is the marketing cost or budget. Unfortunately only available for a portion of Finnish films, the results are hardly conclusive. Regardless the results suggest that the marketing money does not go to waste. Bigger marketing budget increases the success likelihood in the movies tested. Another variable, marketing support is available for the same set of movies. It however provided no additional information to the model, being heavily correlated with the marketing cost variable.

7.5 Information sources

As an unbiased source for information, the critical reviews are important for many potential moviegoers. This thesis supports the idea that higher rated movies are greeted with bigger audiences. The reviews can have an impact on the film's financial performance because of the information it provides to the reader when he is deciding what to see. On the other hand reviews are highly correlated with the IMDb rating, thus they also double as a proxy of the intrinsic quality of the movie. The sample size is reduced for the tests including critics' reviews, due to the incompleteness of the dataset. As the practitioners have no or very little power over the review ratings, using them as a means to improve box office ticket sales is not plausible.

7.6 The artistic quality

The effect of the artistic quality to the movie's financial performance is tested with the same two variables that double as the dependent variables: *Award* and *IMDb rating*. Award is significant at either 1% or 5% levels on models tested. The coefficient is bigger on international regression; it could be that the award winning movies are likelier candidates for international distribution. IMDb rating is also a meaningful addition to the box office revenue and profitability models, it being highly significant on most of the regressions.

Both of these two variables are only available after the film's domestic release, but could influence the international distribution both because the viewers prefer critically acclaimed films and those films are more often presented in international festivals, where the

distribution deal is possible to obtain. However, especially for domestic releases their predicting power comes more directly from the perceived quality of those movies. The word of mouth spreads quickly even if the award is given long after the movie has seized showing. The two variables here are strongly correlated with the review variable, thus the critical reviews are able to communicate the quality to the readers already at the time of release.

It looks as if the European movie audiences value the quality of the movies highly; good movies tend to perform well also in the box offices. Unfortunately for the makers and the financiers, knowing good quality is often impossible before the start of the production, thus the practical implications of the results are rather limited.

7.7 Expert views on Finnish motion picture production

The four interviews that were conducted for this thesis are discussed in this section. Interviews included topics ranging from the motion picture finance in Finland to the future outlook of the industry. For a more thorough description of the expert interview practicalities see the section 6.4.

The issues related to the financing of motion pictures in Finland were among the chief reasons for the interviews and the information obtained was used in the chapter three. In general the view was that the share of private money in productions is still relatively small but the interest is growing. Corporate partnerships do not constitute a major source of finance, although even a material support, for example clothing, is considered to help in productions. Product placement is becoming more common albeit still rare, and the contracts often limit how much private companies are allowed to show on screen. On extreme cases public broadcaster might even cut parts of the movie away, although such thing seldom occurs. The public supporters and the broadcasters are closely involved with the early development parts of making the film. Their role is mostly to help and guide in the production but also to control that their interests are taken into account. Established filmmakers have higher probability of finding financing for their projects than starting ones.

Movie selection process is often based more on personal vision on movie's prospects than a scientific analysis, yet several matters are considered before the start of the production.

The possible financial success of the film does play a role in production decisions and in discussions with the financiers, but at the same time it is admitted that often practitioners' predictive powers are rather limited. Many things that are outside maker's control can affect film's success; music choice can ruin otherwise perfect movie or a sudden scandal could happen day before the release. Personal connections with directors and actors are also important, and in many new projects the cast ready before the production deal has even been signed.

The international distribution is often a goal for the industry insiders, but wide international release is considered to be almost impossible, or "utopian" to hope for. More than one expert stated that the movies that could do well outside the domestic markets are rarely the ones that draw the biggest audiences in the home market. Art house and genre movies with a tightly specified niche audience have a better chance at creating a wider interest than the local hits. Original but universal was suggested as a winning combination, and risk taking should be encouraged more. Too much emphasis put on projected calculations could even backfire; doing your own thing is believed to yield better results. Language was explained to be a formidable obstacle for a wider release, especially in United States English is a practical necessity for a distribution deal. Animations are believed to have a bigger chance outside the home market due to the lessened language problem. Movie format sales are not believed to have a major impact to the Finnish motion picture productions.

The development of new distribution channels is followed with great interest although the long-term implications are still mostly unknown. The Internet is seen as a great possibility for reaching new audiences, but at the same time it could threaten the foundations of current pre-sales financing model if the TV broadcasting rights lose value in the process. The business model for Internet releases is still forming. More generally the theatrical release is believed to lose some of its importance to newer distribution models. That being said, the box office will for a long time be the main promotional channel for movies, even as the DVD sales and rentals are sometimes even exceeding it as a revenue source for the production companies.

One interviewee hoped for more players to enter the motion picture production field to increase competition and originality. The classic division to art and mainstream films was

considered to fit poorly to Finnish market, where most movies tend to lay somewhere in between the extremes.

According to the interviewees the future of Finnish movies is bright in general, although the current situation with the public support raised some questions. It was considered to be a necessity if Finnish language movies are to be made with similar quality and quantity in the future. The government carries some of the numerous risks involved with movie making, and motion pictures being the most followed form of culture its support is not a waste of taxpayers' money. However even if the role of public support would diminish, some movies would be made, and the increased financial independence could in theory even create a positive signal for the industry.

8 Conclusions

This is the final chapter of the thesis and it summarizes and concludes the study. In addition it discusses the practical implications of the findings, and finally presents suggestions for future research.

This study shows that motion pictures have determinants that can predict a movie's success in both financial and critical quality terms. "Someone knows" - the film industry is not a complete mystery as a business at least in the countries of this thesis. That being said, there remains a large number of variables that cannot be forecasted or influenced at the start of the production. After securing the financial backing, hiring the right group of talent and designing the perfect release, the movie is still vulnerable to forces beyond anyone's control. Compared to earlier research the findings of this study are both supportive and contradicting. The markets of Nordic countries seem to be slightly easier to predict than North American or central and southern European markets.

This thesis finds that the size of the budget is a significant predictor of film's box office revenue, but on the other hand bigger productions are not as profitable as the smaller ones. The production size effect is most clearly seen in domestic releases. In international releases the source of funds has a magnified impact; international co-funding is a contributing factor to the income.

Production support appears to go to the movies that do well in the domestic theaters. The public supporters try to keep the market share of domestic movies high, and they seem to be quite successful at it. The big role of culture subsidies in Nordic countries is often rationalized on non-financial reasons; all forms of art cannot sustain themselves without public support. These non-economic goals are present in the results; the IMDb scores improve with the increases to public support. Overall the public supporters appear to be reasonably good at predicting the movies' behavior. As practically every movie production in the countries of the study receives public support, it is difficult to assess what would happen without it. The industry insiders are confident that moviemaking would not be possible at least in the same scale if the support were to be ceased.

The choice of actors and directors clearly has an impact to a movie's financial performance, and both contribute to the domestic box office returns. Sequels are also performing well financially. Neither stars nor sequels have any significance at the international markets, which confirms that their direct impact comes from the additions to movie's brand value. Critically acclaimed movies are also popular at the theaters, however this study is unable to differentiate the effect between the critics' role as both influencers and predictors. Award wins and high IMDb score are both more common with financially well performing movies.

The genre choice has an impact on a movie's financial success. In Northern Europe audiences favor comedies to dramas. Additionally, family movies and animations have a better likelihood at succeeding in the theaters. Moreover, the latter genre performs exceptionally well in international markets. Documentaries are considered to be of high quality, but their theatrical release does not interest large audiences. Age ratings have no significance in a movies financial success. They either do not matter, or the added content allowed in higher rated movies is enough to compensate for the theoretically smaller potential audience.

Summer and winter are both good periods to release a movie. Films released during spring and fall are often more critically acclaimed but fare worse in theaters. Summer releases tend be specifically designed to cater to local tastes, and they do not generate much interest at international markets.

8.1 Managerial implications

The implications of the findings of this thesis to the current practitioners in the industry are summarized in the next few paragraphs. Actions taken during every stage of the production are all important with regards to the financial success of the movie.

Widening the financial base of a movie production is especially vital if the movie is to be released internationally as connections and presale agreements often secure a release. Even if the movie is made primarily for the home market, more diversified funding can enhance the independence of the project, thus allowing more room for creativity. Private investors are

currently a rare sight in movie productions, despite the fact that the public bodies carry the biggest risks in them. More standardized movie project structures could make investing in productions easier.

Marketing has a fundamental role in a movie's financial success. Having a star actor or a director in the movie is essentially a brand asset, and as with sequels the new movie benefits from the earlier successes of the cast. Increasing the marketing budget can also be beneficial. Essentially the goal is to create a marketing mix that appeals not only to the audience but also to the exhibitors. Increasing the number of opening screens equals higher admissions. Carefully planning the release timing is useful. The relative difference to other movies released the same time is important.

International distribution allows, at least in theory, financial gains many times larger than staying in the domestic market. Unfortunately, the evidence suggests that movies with international appeal are not the biggest box office hits back home. International breakthrough requires truly original and thus risky content, which is not the revenue maximizing strategy in the home market. However, the potential upside is practically limitless.

8.2 Public policy implications

The recent debate in the Finnish media about the role of public support in motion picture production has brought up more questions than answers. Should the public money go to pure art movies instead of movies that can support themselves without it? Should the development stage have a bigger share of all movie support? This study can add to the discussion with the following observations.

The current goal set by the government is that 15 percent share of total admissions revenue each year should come from Finnish movies. Lately the threshold has been passed with flying colors even though less than ten percent of the total number of movies released were Finnish. This study confirms that the Finnish Film Foundation and other public financiers have been very good at funding movies that have a good likelihood at succeeding at the theaters in Finland. The question is: is the goal correctly set? The outlook of Finnish movies is not as rosy if international distribution is considered. Finnish motion pictures are

not exported. Although comparison to Denmark may not be fair because of the huge discrepancy in support and production budgets, but I will do it regardless. The primary goal of the Danish Film Institute is "maintaining high standards of quality". Danish films are much more prevalent in international theaters. The bigger budgets in Denmark can hardly be the full explanation; according to this study box office performance is more loosely connected to the production size in international markets than in domestic ones.

The academic justification for public support in culture industries is presented in the earlier part of this thesis. The conclusion (Bagella and Bechetti, 1999) was that support could be justified if the cultural product can be regarded as art. Defining art is mostly subjective, but it is not completely unreasonable to consider some of the movie productions in Finland to be strictly business endeavors. If risk taking were to be encouraged in motion picture productions, the support would be better suited to go to a wide variety of different original productions. The latest developments in support decisions in Finland could mean that the view of supporting risk taking in films has advocates.

8.3 Suggestions for further research

Financial research of entertainment is still rather limited. Similar methods that are used in this thesis could be applied to other entertainment industries that have short life cycles and volatile demand. Research of videogames, music and fashion goods for example could provide interesting results. Researching other industries with culture support and how they relate to the results of this study might also be beneficial.

The motion picture industry is rapidly changing. New distribution methods are transforming the old business model to something completely different. The effect of Internet distribution might be worthwhile to study in a few years. The Internet and movies could have research opportunities in many different fields as well.

The entertainment industry is a domain of small companies; where publicly traded enterprises are few. The stock market performance of public companies in an event of a major entertainment product release would be interesting if such data came available. Can the financial markets predict the success of an entertainment product? An event study method

could provide interesting results. The problem is that one product rarely is large enough to have a substantial effect. The videogame industry might have large enough single releases as well as publicly traded publishing companies.

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